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UNITED STATES DEPARTMENT OF AGRICULTURE

BULLETIN No. 1044

Contribution from the Bureau of Markets and Crop Estimates
H. C. TAYLOR, Chief

Washington, D. C. ▼ April 19, 1922

SELF-SERVICE IN THE RETAILING OF FOOD PRODUCTS

By F. E. CHAFFEE, formerly Investigator in City Marketing and McFALL KERBEY, Assistant, Bureau of Markets

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A study of the principles of self-service, their application to the retail distribution of foodstuffs, and the results obtained through their application, necessitated a close cooperation between the Bureau of Markets and the operators of self-serve grocery stores. Almost without exception the retailers from whom information was requested evidenced a keen desire to cooperate with the bureau.

Special acknowledgment is due to the managing director of the Duffy-Powers Co., Rochester, N. Y., for his personal aid and his generosity in granting the bureau practically unlimited use of the self-serve grocery department of the company for investigational and experimental purposes.

Other stores and organizations cooperating with the Bureau of Markets in this study were: Hillman's, Chicago, Ill.; Liberty Market, Indianapolis, Ind.; The Groceteria, St. Paul, Minn.; Piggly-Wiggly, Memphis, Tenn.; L. S. Ayres & Co., Indianapolis, Ind.; Acme Stores Co., Los Angeles, Calif.; The Emporium, San Francisco, Calif.; Bay Cities Mercantile Co., Santa Monica, Calif.; Groceteria Stores Co., Seattle, Wash.; Gerard Grocery Co., Pomona, Calif.; U-Save Stores (Inc.), Cambridge, Mass.; and bureau of business research of the graduate school of business administration of Harvard University.

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INTRODUCTION.

The cost of distribution plays an important part in the final cost of food to the consumer. Under the methods that have been in common use for generations in the United States this cost is now very high. It has been estimated [1] that of the price paid by the consumer for perishable farm products used for food, from 25 to 75 per cent commonly goes to pay the cost of distribution—that is, the cost and profits of handling after the products leave the hands of the producer. In the case of certain products and certain distributing agencies the proportion of the final price which goes to pay distribution costs is even greater than 75 per cent.

Of the cost of distributing food products, the cost of the final step, retailing, is of major importance, since that single step, on the average, approximates the cost of all the preceding distribution steps together. There are many good reasons for this, but we are led to the conclusion that one of the most urgent points at which to attack the high cost of living is through the group of agencies concerned with the retailing of foods.

Several recent developments in the distribution field have had a tendency to reduce the cost of retailing. Such developments are par-

[1] Weld, L. H. D., Studies in Marketing of Farm Products, p. 7.

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ticularly important to farmers, since much farm produce is highly perishable and necessarily must have a rapid turnover if waste is to be avoided. The retailer is the final outlet, and if he must charge a high price for his goods, because of his heavy operating expense, he blocks the channels of trade and causes a slowing down in the flow along the entire distribution system, all the way back to the producer. Therefore, any method that will reduce the cost of retail-store operation, or make the retailer more efficient, is of importance to the grower of perishable farm products as well as to the consumer. It will increase the grower's outlet because of the reduced cost of the produce to the consumer.

Since a large percentage of the farm products distributed are sold through grocery stores, it has been considered advisable to study the methods, cost of operation, and possibilities of some of the new types of such stores in order to determine whether there is a probability that costs of retail distribution of foodstuffs, including farm products, can be materially lowered in the immediate future.

During most of the period between 1900 and 1910 there was an increasing demand for service. Competition forced dealers to add one service after another until the system became overburdened. With the marked increases in prices after the outbreak of the World War there came a reaction. Consumers had to give more thought to the buying of foodstuffs, and prices, rather than convenience and service, became the all-important consideration. An increasingly large part of the public came to realize that under the more common methods of retailing, the cost of service, though advertised as free, was necessarily included in the price of merchandise, whether or not the customer availed himself of such service.

As a result of this growing recognition that a cost is necessarily attached to service, several types of so-called nonservice grocery stores have come into existence. Of these the self-service store has been the most radical development, since it has come closest to the complete elimination of service. This type of store is generally believed to have originated on the Pacific coast, but its development probably was simultaneous in several parts of the country.

In this bulletin the "service" stores referred to are of the "cash and carry" type. They are used in comparison with "self-service," because they approach the latter most nearly in cost of operation and service rendered to customers. If comparison were made with the "credit and delivery" type of store, the differences would be much greater.

SELF-SERVICE.

Self-service means, of course, to serve one's self. The use of the phrase in connection with the retail distribution of merchandise applies to those retail establishments so constructed and operated

that customers are required to make their own selections of merchandise, taking the goods off the shelves or tables and carrying them to a special place where payment is made for those selected. This system applies not only to the distribution of foodstuffs, but is applicable to almost any line of merchandise. It is being successfully applied to the retail distribution of clothing, millinery, shoes, dry goods, and other lines, which at first thought would seem to be of such a nature as to prohibit their sale under the self-service plan.

There is a common belief among the retail grocers of the country and the general public, especially in the East, that the term self-service is used only in connection with a certain corporation operating a number of self-service stores. This is no more true than that the expression "chain-store method of distribution" means a certain company operating a chain of stores. Neither is the idea correct that permission must be secured from any corporation to operate a self-service store. The corporation referred to does hold certain patents covering floor plans and certain interior arrangement of their stores, but principles of self-service can not be patented, being nearly as old as distribution itself. Particular floor plans and arrangements apparently are not vital to the operation of a self-service store.

In the ordinary type of retail store merchandise can not be purchased without paying for the cost of certain services. There is no such thing as "free service," as commonly advertised by many retailers. A direct charge for service may not be made, but its cost is included necessarily in the selling price of the merchandise. The average food store has only one price for each article sold. One person may buy an article, pay cash, and carry it home. The next purchaser may ask to have a similar article delivered several miles away and to have it charged, not paying for it for 30 to 60 days. Yet to each of those customers the price is the same. This is obviously unfair to the "cash and carry" customer. Furthermore, such a system stimulates a demand for service and penalizes the consumer who does not ask for it nor want it. In the average retail store the cost of delivery amounts to about 2.4 per cent of total sales and the cost of credit to about 1 per cent[2] (one-half per cent loss from bad debts and one-half per cent for keeping the account). If a charge were made for the credit and delivery service rendered, based on the actual cost of the service, the second customer would pay about 3½ per cent more for his goods than the first.

Self-service may be operated on the "credit and delivery" basis, but in this bulletin it is assumed to be operated on the "cash and carry" basis. In fact, it is operated on the "cash and carry" basis in nearly every instance. In a few cases delivery service is furnished

[2] Figures compiled by the bureau of business research of the graduate school of business administration of Harvard University.

if desired, but a specific charge is made, and usually the actual delivery is performed by an outside agency.

ADVANTAGES AND DISADVANTAGES OF SELF-SERVICE.

The advantages and disadvantages of self-service are marked, so much so, in fact, that it seems apparent that the principle of self-service can not be applied in a haphazard way to any store at any location or under any management and be entirely successful. But under proper conditions, which will be explained later, it has proved to be a factor in making possible a considerable reduction in the cost of distributing merchandise to the consumer. In order that the advantages may be utilized to the fullest extent, a considerable amount of study previous to installation is necessary, and in order that the disadvantages do not offset the advantages an efficient management is essential.

Any store to be entirely successful must necessarily have a good location and an efficient management. But the self-service plan involves new features and problems to which particular attention must be paid. If operated along the lines of the ordinary grocery store without previous study of its special problems the chances for its success are limited. These special problems are not in themselves difficult, but demand only full understanding before the principles are put into operation.

ADVANTAGES.

LOW OPERATING EXPENSE.

Low operating expense is the greatest advantage and the feature which gives self-service its claim to a prominent place in the system of distribution. If it were not for this feature, self-service would be unknown, since the fact that it involves a decrease in service on the part of the distributor can hardly be considered an advantage in itself. The eliminated service must necessarily be compensated for by a reduced cost of merchandise to the consumer, all other things being equal, in order that the consumer's trade may be obtained and held. This is made possible by the reduced cost of doing business.

There is a direct reduction in the wage expense because of the small number of employees necessary to operate a self-service store. As compared with the service store, whether "cash-and-carry" or "credit and delivery," this expense usually is practically cut in half. In stores having a very large volume of sales the saving, under efficient management and arrangement, may be even more than this. In general, the larger the volume the greater the economy that can be effected. These economies do not result entirely through greater efficiency (which may be applied to any business), but are partially inherent in the principle itself.

Under the service plan an added volume of business necessitates more clerks to wait on the additional customers. This is not necessary under the self-service plan. An increase in volume necessitates only additional stockmen and cashiers, which, of course, are necessary in a store of any magnitude under any plan. For example, let it be assumed that there are two stores doing a business of $500 a day, one operating under the self-service plan and one under the cash-and-carry plan with salesmen. Studies of stores of both types indicate that under the former plan it would require, at the outside, about two stockmen, one cashier, and one checker, while under the latter it would probably require five clerks to wait on the customers, one stockman, and one cashier. This includes only those employees who handle the merchandise or come in contact with the customers. The saving in number of employees by self-service would be 43 per cent. Now, let it be assumed that these stores are doing a business of $1,000 a day. A survey of grocery establishments of both types indicates that the $1,000 a day self-service would probably require two cashiers, two checkers, and three stockmen, while under cash and carry ten clerks, two cashiers, and two stockmen would be needed. This would be a saving of 50 per cent in the number of employees under self-service. Obviously, stores of the two types doing exactly the same amount of business and operating under conditions exactly comparable in every respect can not be found; but the studies of existing stores under closely comparable conditions indicate the correctness of these deductions.

If the saving is translated to money value, it is even more apparent because of the different rates of wages paid for different classes of work. If a good sales clerk is paid $25 per week, a stockman or checker $20 per week, and a cashier $15, which fairly represents the difference in wages paid these classes, the weekly wage expense, with the store doing $500 per day, would be $75 under self-service and $160 under cash and carry, or a saving of 53 per cent by self-service. If the stores were doing a business of $1,000 a day, the wage cost under self-service would be $130 and under cash and carry $320, or a saving of 68 per cent in favor of self-service.

The average expense for wages of salesmen in the cash-and-carry store referred to, doing a business of $6,000 a week, would be, therefore, between 5 and 6 per cent of the total sales. The self-service store with a like volume of business and the weekly wages referred to would operate on a wage expense of between 2 and 3 per cent of total sales.

There are other savings in expense under the self-service plan which, although not so marked as those of wages, are of considerable importance in the aggregate. These are largely attributable to the

greater volume evidently possible under self-service than under the cash-and-carry plan, even though both utilize the same floor space.

Such "fixed charges," as for rent, heat, light, insurance, depreciation, and perhaps telephone, would remain the same, no matter how much business was done in any particular store. If a certain store under the cash-and-carry plan, with only space enough to do a $500 business, changed to self-service, studies show that it could probably handle a $1,000 business. All fixed charges when measured as percentages of total sales would in such a case be reduced one-half. The fixed charges in cash-and-carry stores amount on an average to about 2 per cent of sales. If the change were made with the result assumed above, the fixed charges would be reduced to about 1 per cent of sales. Such expenses as advertising, management, buying, and miscellaneous expense would be slightly higher in doing a $1,000 business instead of a $500 business, but they would not be twice as much. It would require a doubling of the actual expense mentioned in order that its percentage of the sales remain the same. Since such expense would be increased only slightly when sales were doubled, the percentage of sales would therefore probably be between 1.5 per cent and 2 per cent, as against 3 per cent for the $500 cash-and-carry business. The wrapping expense in terms of percentage would remain about the same, as it is directly proportional to the amount of merchandise sold.

Up to this point, under the conditions assumed, a saving of about 5 per cent in expense would be effected. The figures used have been more or less arbitrary, but are representative enough for this demonstration. In a later chapter more exact figures as to self-service operation will be given. In some instances stores operating under the plan have effected a saving of around 10 per cent of sales over the average expense necessary for the operation of a cash-and-carry store. This has resulted from efficient management and the taking of full advantage of those economies inherent in the self-service plan.

SMALL INVESTMENT.

As previously stated, the principle of operating on a small margin of profit, rapid turnover, and large volume should go hand in hand with self-service.

As perhaps twice the amount of business can be done under self-service with practically the same capital investment and floor space, the same percentage of net profit on sales is not necessary under this plan as compared with the cash-and-carry or credit-and-delivery plans in order to return to the operator a reasonable profit on his investment.

So many factors, such as location, type of trade, trend of business conditions, enter into the volume of trade of a given store that

definite proof can not be obtained as to the increased amount of business which can be done with the same floor space, but all of the studies made of properly managed stores tended to support the statement as given above.

Suppose a grocer doing a $500 business per day under the cash-and-carry plan changed to the self-service plan and, because of the trade-drawing power of his reduced prices, made possible from a lower operating expense, was able to do a business of $1,000 per day. Also suppose that under the first plan his prices were based on a 5 per cent margin of net profit, which he considered would bring him a fair return on his capital invested and his business ability. Under self-service under the conditions assumed he could base his prices on a 3 per cent margin of net profit and still make more money than before. In this way he would be increasing his own return while giving the consumer an additional 2 per cent reduction in the cost of the merchandise purchased.

PARTIAL SOLUTION OF HELP PROBLEM.

One of the most important and difficult problems with which the average business man has to deal is that of help. This is especially true of those who have to employ sales persons, since their personality and appearance, as well as their technical ability, must be carefully considered. The sales person is the direct representative of the business, and a great deal depends on him. Next to the merchandise carried and its selling price, the sales person is chiefly responsible for the attitude of the customer toward the business. It is his attitude toward the purchaser, to a large extent, that gains or loses the customer trade. If one asks the average housewife why she does not now trade with a certain store, she is as likely to say that she did not like the clerk as she is to say that the prices or merchandise were not right.

To make sure that the sales people will properly represent the employer requires considerable time and expense in training and the payment of high wages. Under the self-service plan this problem is largely eliminated. It is still present to a certain extent, but it is much less complicated, as the employees can be chosen mainly with one requirement in mind—their mechanical ability, for the customer does not come in contact with the employees, except at the cashier's desk.

CUSTOMERS' SATISFACTION.

Possibly one of the most annoying conditions that has arisen in connection with the development of cash-and-carry stores is the inability to take care of the customers during the rush hours. The system is rather inelastic in that respect. In order to handle the customers properly during the busiest hours, a larger number of clerks

is necessary than can be efficiently employed through the remainder of the day.

Some of the chain-store companies have given up trying to supply adequate service to the customers during rush periods because it was found to be too expensive. As a result, the customers lose much time, grow impatient, and are harder to please. The overworked clerks are likely to hurry the customers in their selection of goods and to become discourteous at times. Numerous customers endeavor to aid the situation by selecting as many of their purchases as the store arrangements will permit and bringing them to the counter, so they may be waited upon more quickly. This partial self-service is rather unsatisfactory from both the dealers' and customers' standpoints. As only a few packages are wrapped in cash-and-carry stores, the clerk does not know certainly whether the customer has paid for the articles he has in his hand or not. The customers perform this work with a certain amount of mental protest, not knowing whether they will be criticized by the clerk for adding to the general confusion.

One of the most satisfying features of the self-service plan is the ability to take care of the customers during the rush hours with a minimum of inconvenience to the dealer and the customer. It requires only from one to two persons (depending upon the system of checking used) to double the capacity under the self-service plan, and these can be drawn from work which is not usually pressing at that time. This elasticity of the self-service plan is a very economical feature. It eliminates, to a large extent, the extra-help problem, which is a rather difficult and unsatisfactory one to both the employer and the customers. Persons working odd hours are usually more or less inexperienced and unreliable, and generally present more of a management problem than does the regular help.

A psychological advantage is also derived from this elasticity. The average person is so constituted that time spent in action, either mental or physical, is more satisfying than the same amount of time spent in inaction and waiting. Suppose that during a busy period of the day a customer has to spend 15 minutes in making a purchase of groceries, and that the same amount of time would be required whether the goods were bought at a self-service store or at a service store. Assume that in the service store the customer spends 10 minutes waiting for a clerk, 5 minutes making purchases, and 2 minutes waiting at the checker's counter, and that in the self-service store 13 minutes are used in making purchases and 2 minutes in waiting at the checker's. While the customer may spend the same amount of time in each place, it is evident that he would emerge from the self-service store in a much better frame of mind, simply because he has had to wait unemployed only one-fifth of the time in that store that he did in the service store.

Under actual conditions, the time spent in the self-service store is considerably less on the average than in the service store; therefore there is a physical as well as a psychological advantage. A customer familiar with the self-service plan can wait upon himself in approximately the same amount of time that it takes a clerk to wait on him in the service store. The extra time involved in ascertaining the location of certain articles in the one is usually offset by the time consumed in conversation in the other. Therefore, using the above figures, the customer could make the purchases in the self-service store in about 7 minutes, as compared with 15 minutes in the service store. Such a saving in time, of course, would be effected only during the rush hours, but since the majority of people buy during those hours the total time saved would be large.

During the quieter part of the day a customer can be waited upon as soon as he comes into the service store. With either plan the same amount of time will be involved in making the purchases. Therefore if any advantage exists in self-service under these conditions, aside from lower prices, it will be found probably in the general attitude of the customer toward the plan. Does such an advantage exist? The experience of numerous operators indicates that it does. Whether or not this is merely because of the novelty is a debatable question. There seem, however, to be certain psychological forces involved which have a tendency to throw the advantage toward the self-service plan. Groceries have heretofore been convenience goods; that is, they were purchased at the most convenient place with not much regard to price. But of late they have tended to enter more and more into the shopping class; that is, they are now being bought after a closer comparison of quality and price.

The fact that the accessibility of the merchandise appeals to most women is recognized by many of the large department stores and by the 10-cent chain-store organizations. A woman likes to be free to take time in the examination and selection of her purchases. She seldom feels perfectly at ease in doing this when attended by a sales person. Under self-service this disadvantage is done away with. A purchaser coming into the store has free access to every article for sale. She is her own saleswoman, and in making careful examination of the merchandise she is using no time but her own, and therefore is entirely at ease. If she wishes to ask any questions about the goods, there is some one on the floor to answer them, but he is merely an information aid and not a salesman. This advantage is more marked in the selling of larger articles (clothing, furniture, etc.), where the cost per article is greater; but it is evident in the sale of groceries.

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Another psychological appeal in self-service which can not be overlooked is the natural satisfaction which most people derive from getting behind the counter. The average person generally wishes to handle the goods on a grocer's shelves and enjoys the opportunity to do so.

EDUCATION THROUGH DISPLAY.

The usual procedure followed by the customer in purchasing groceries is to make out a list of the articles desired, go to the grocery store, and give the clerk the list. The clerk gets the articles, wraps them up, and takes the money. The customer may ask several questions as to the quality or price of a few articles (usually fruits or vegetables), and the clerk may suggest one or two other articles to the customer. Aside from this, the customer has merely had his order filled. He sees only a small part of the stock on sale, usually not more than those articles on special display. He has been in the habit of relying entirely on the sales clerk and does not take advantage of the opportunity to examine the goods in order that he may know what the dealer carries in stock. In fact, most of the stock is on the shelves behind counters, which prohibits a close inspection.

Under self-service the customer is forced to rely entirely upon himself. In filling his list he comes in contact with nearly the entire stock. Consequently he comes to know the articles carried, and is reminded of goods he may have forgotten or has not thought of for some time. This does not necessarily imply that over a period of time he buys more groceries, but that he is less likely to have to come so often, and also that he is less likely to get into a rut in his buying.

DISADVANTAGES.

LIMITATIONS OF SELF-SERVICE.

There is probably no one method of distribution which from some angle does not fall short in supplying fully and to the best possible advantage all the demands that are made by customers. Self-service is no exception. It can not reach nor satisfy all classes of people, nor is it intended to do so.

There is, and doubtless always will be, a large group, perhaps even a majority, who will demand service of some kind. It may be only the service supplied by the clerks in cash-and-carry stores, or it may be delivery or credit. All service costs the consumer something, whether the cost is included in the price of the merchandise or whether it is an additional charge. There will always be people who are willing to pay for service, whether they need it or not, and also people to whom such service is a necessity. This must be fully understood and appreciated, as self-service should not be considered a panacea, but merely a method by which a certain class of people may be sup-

plied in a way which best satisfies their particular needs. That such a class exists and that it is of sufficient magnitude to justify amply the existence of this method has been fairly well demonstrated by the success of those now operating self-service stores.

LACK OF SALESMANSHIP.

Both consumers and dealers have expressed an objection to self-service, as they feel that a salesman is an essential connecting link between the buyer and the merchandise and that the elimination of the salesman causes much confusion on the dealer's as well as the customer's part. They feel that the consumer has no way of ascertaining the quality or grade of any particular article with which he was not familiar, especially with canned goods; that the dealer is limited largely to nationally advertised goods and is unable to call the attention of the customer to new products or special bargains. These objections are usually made by persons who have only a slight knowledge of the results of operating under self-service. While the objections are true to a certain extent, nevertheless, when compared with the advantages derived from this same lack of salesmanship, they seem to lose a large part of their significance. Also, these disadvantages can be partially eliminated through proper coordination of advertising methods and the backing up of the advertising by the display of merchandise. This problem will be dealt with in a later section.

Under the self-serve plan customers are forced to rely upon themselves in locating their purchases. While they have the opportunity to obtain any information desired, it is surprising in actual practice what few inquiries are made. This would seem to show that customers have a considerable knowledge of grades and brands which they do not use under the service plan.

INCONVENIENCE TO CUSTOMER.

Some purchasers object to self-serve stores because they sometimes make it necessary for the purchasers themselves to handle vegetables to which earth adheres or articles that may be dusty. They also sometimes object to buying such commodities as bananas by the pound. Such customers obviously should go to the stores that are better fitted to give them the kind of service they require and they should be willing to pay the higher prices for the goods so received.

THIEVERY.

The question of thievery in connection with self-service has probably had more widespread publicity than any other feature. It is a question on which strong opposing views are held. Some operators say that the loss through thievery is less in the self-serve store than

in a service store, others that it is no more in the former than in the latter, and some dealers believe that it exists in self-service to such an extent as to make the plan entirely impracticable. It is almost impossible to determine the exact percentage of loss from this cause in any store. Therefore the views held are practically the result of supposition and incomplete observation.

"Don't you lose a great deal of merchandise under this plan?" is the first question usually put to operators of self-serve stores. Under all other methods of distribution the potential customers have become so accustomed to having restrictions imposed upon them as to their movements while in any store that they do not seem to be able to grasp the feasibility of allowing free access to all merchandise. Assuming that one of the impressions of the average customer in first coming into a self-service store is the ease with which small articles could be taken from the store without detection, since by far the greater majority of people are honest in practice, no action would result from it. This leaves only a small percentage who might be influenced by the thought. Is it not fair to assume that a large proportion of these would not put their impulses into action because of their fear of detection in passing the cashier? Simultaneously with the thought of stealing comes the fear of detection, and this fear would overcome the impulse to steal in a majority of cases.

This leaves a very small percentage who might actually put their impulses into action, but the percentage is large enough to receive considerable attention. The composition of this small group, the extent to which they pilfer, and the nature of their pilfering are matters about which little is known. From the experience of numerous operators, it seems that the persons who attempt to pilfer are by no means confined to the poorer classes and that the articles taken are not those which would be classed as necessities. The articles taken are necessarily usually small and more or less high priced, such as fancy sardines, anchovy paste, potted chicken, and small bottles of olive oil.

The actual extent of losses specifically from petty thievery has been variously estimated from almost nothing to 4 or 5 per cent of the total sales. A more common estimate is around 1 per cent. Through a system of retail stock control, which will be taken up in detail later, it is possible to determine rather accurately the shrinkage in the merchandise from all causes. This shrinkage is the difference between the value at selling price of the stock placed on sale and the money which is taken in, and is the result of various causes, including loss through overweight, evaporation, spoilage, deterioration, errors made by the cashier or clerk, and petty thievery, both on the part of employees and customers. It is impossible to segregate

all of these losses in order to determine to just what extent each occurs. In one of the self-serve stores investigated, which was operated under a retail stock-control plan, a number of these factors were eliminated, which would result in a more accurate determination of the loss through thievery. Practically all commodities were handled in packages put up in another department, to which was charged the loss resulting through waste and overweight. Few articles that would lose weight through evaporation were carried, and those were sold in packages, so that there was no loss to the store. Thus the shrinkage consisted only of cashier's errors and loss through thievery. As cashier's errors are as likely to be in favor of the store as against it, the shrinkage almost entirely represented thievery. It was slightly more than 1.5 per cent of the total sales.

Petty thievery exists more or less in all stores. While it may be slightly emphasized in self-service stores owing to the psychological effect of the store arrangement and the method of selling, it is not peculiar to this type. This is demonstrated very clearly by the experience of several large department stores that operate self-serve grocery departments while the remaining departments are operated on the regular-service plan. A large percentage of the persons caught stealing in the grocery department was found to have on their persons articles stolen from other departments and other stores.

The fact that the problem of thievery is especially brought to the attention of the self-serve operator and that special consideration is given to it goes a long way toward reducing the amount of stealing in such stores. On the whole, it seems doubtful whether self-serve stores lose more through thievery, relatively speaking, than other types of retail establishments, for the latter suffer not only from stealing on the part of customers but in some cases also from lax or even dishonest clerks. Methods of combating petty thievery are discussed later.

From one point of view the necessity for the exercise of great care in buying merchandise for self-serve stores of such quality that its worth can be recognized without the aid of explanations from salesmen may be looked upon as a disadvantage. Similarly, the necessity for the more careful grading of articles in self-service stores than in other stores may be considered disadvantageous. Keeping in mind, however, that most of the customers of self-service establishments are those willing to forego the multiplicity of grades as well as the service of fancy stores, it will be readily understood that the simpler stocks, involving smaller capital tied up, resulting from strict grading, compensate for the greater attention which must be given to buying and grading. The problems of buying and grading for self-service stores are discussed later.

PROBLEMS IN SELF-SERVICE.

As previously stated, the operation of a self-serve store involves numerous problems which are peculiar to this plan and which require careful consideration and a thorough understanding in order that self-service may be a success. In numerous cases grocers have changed their stores to self-service, failed to make a success, and sooner or later reverted to their old way of doing business. The main reason for their failure was that they did not recognize and put into operation the fundamental principles of self-service. They merely changed the physical arrangement in their stores to comply with self-service. As a result, practically none of the real advantages were obtained, while the disadvantages were magnified, and almost no attempt was made to cope with them.

LOCATION.

The self-service principle can not be counted upon to meet the needs of a very large percentage of people in any particular group, because of the limited service given. Therefore it is not a neighborhood proposition, but one that should be operated at a trading center. This does not imply that its usefulness is limited to the congested districts of large cities but that its location should be such that a relatively small percentage of the people in the locality, either transient or resident, will form a group sufficiently large to insure its success. The so-called corner grocery, because of the extensive and convenient service that it offers, appeals to a larger percentage of the people as a rule, in spite of the higher prices which it must charge. Therefore it does not require such a large territory from which to draw its trade.

The more specialized any system becomes the fewer it will reach in any given locality. The restricted application of self-service is not an undesirable feature, but rather a good one, provided this fact is fully recognized before the location of the store is determined. Its limitations make it possible to meet more fully the needs of that particular class for which it is intended.

It is possible that a self-serve store might exist as a neighborhood enterprise, but its success probably would be very limited, since the economies resulting under such conditions would hardly be sufficient to warrant its existence. In other words, in order that full advantage may be taken of all of the possibilities of self-service, a maximum volume of trade must be obtained. In order to obtain such a volume, the location of the store should be such that its patrons will be drawn from a considerable territory rather than from a radius of a block or two, as is often the case with the smaller grocery stores of the "corner" type.

STORE ARRANGEMENT.

The store arrangement and layout under self-service need not necessarily be in accordance with any hard-and-fast plans, in so far as details are concerned. In fact, there are nearly as many plans for the arrangement of fixtures and the display of stock as there are stores. For successful operation, however, one general requirement as to arrangement must be met; a separate entrance and exit must be provided for the section devoted to the display of goods for sale. In almost no case are the details of arrangement vital to successful operation, but there are certain problems involved which warrant careful consideration.

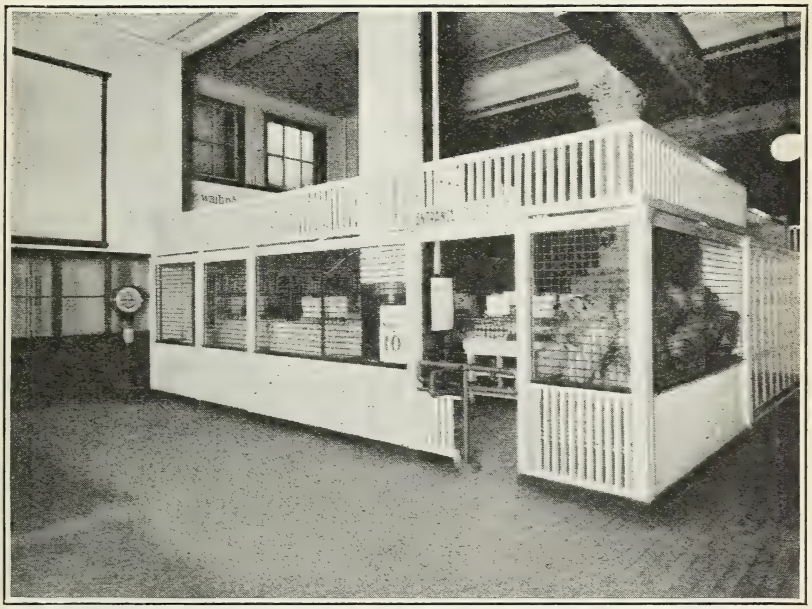

FIG. 1.—Entrance to self-serve grocery department in department store with one-way turnstile.

LAYOUT.

The store should be so arranged that the merchandise displayed for sale shall be in an inclosure that is provided with "one-way" entrances and exits in order that the movements of the customers can be controlled to facilitate the proper checking of the merchandise selected and payment for it. (See fig. 1.) This inclosure may take any shape made necessary by the shape and size of the store room. In its simplest form it would be as shown in figure 2.

The important part of this arrangement is the exit. At that point only does every customer come in contact with the personnel of the store. There the prices of his purchases are added, the merchandise

is wrapped, and his money is received. If particular attention is not paid to the facilities for performing these functions, serious difficulties are likely to be encountered. The number of exits necessary will depend upon the size of the business, the special conditions of the trade (whether it is steady or fluctuates considerably), and the methods used in checking. When one experienced person does the checking, wrapping, and cashiering, it requires about a minute to take care of the average customer, but when two persons do this work it can be done in practically half the time. In some cases three persons or more are used, and this again reduces the time required.

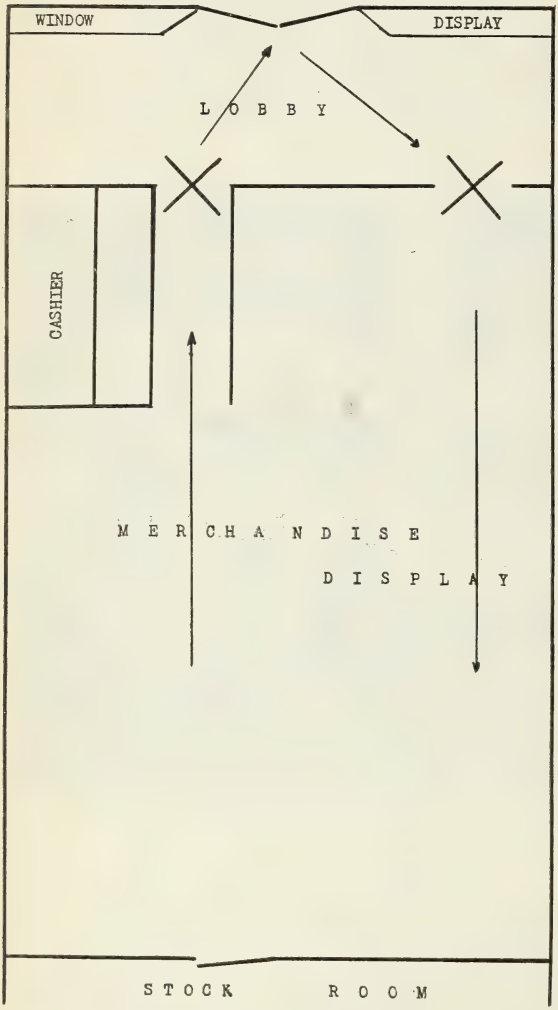

FIG. 2.—Diagram of a typical self-serve store, showing the entrance and exit.

Whether one, two, or three persons are stationed at the exit depends entirely upon conditions, as the principle involved is the same. When two persons are used, one usually checks and receives the money while the other wraps the merchandise. The employee who wraps usually calls the articles to the cashier, the latter entering the amounts on the adding machine. When three persons are used, the first usually adds and totals the purchases, the second takes the money, and the third wraps. This plan is the least satisfactory, as it requires an extra handling of the merchandise. It should not be used unless it be impossible, because of the store arrangement, to add another exit,

or unless two persons at the existing exit are not able to take proper care of the customers. It is very much to be desired that the exits be of such number and arrangement that the customer will not be required to wait for any appreciable period, and this usually can be accomplished.

Figure 3 shows the simplest plan for an arrangement of the exits and cashier's desk in a one-exit store. This arrangement can be

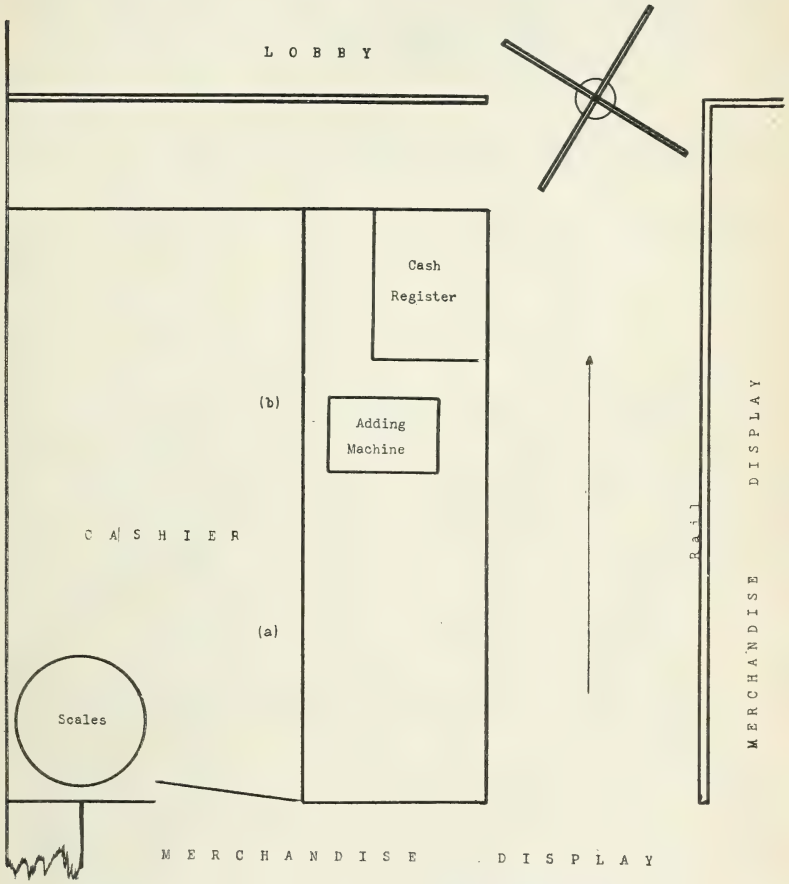

FIG. 3.—One-way exit where only one employee is used.

used with any number of cashiers or checkers by merely lengthening the counter sufficiently. But under the most efficient arrangement there should not be more than two employees for each exit. If there is only one employee, there should be a small cash register and adding machine, together with a scale, and equipment for wrapping the merchandise. An adding machine is not essential, but contributes materially to the speed and accuracy of the work. When two employees are used at the exit the following alternative plan is efficient:

The checker, standing at *a* in figure 3, takes the basket of merchandise from the customer and calls the price of each article to the cashier at *b*, who registers it on the adding machine. If there are any articles to be weighed, the checker weighs them on the scale at his side and then calls the amount to the cashier. After all the packages have been taken out of the basket the cashier totals the amount, presents the adding-machine slip, receives the money from the customer, and makes the change. Meanwhile the checker wraps the merchandise. By this arrangement the customer is taken care of in the least possible time. The only objection to using two employees at the exit is that during certain parts of the day there are not enough customers passing through to keep them busy. At such times one employee can serve both as cashier and checker and free the other for restocking the shelves and other work.

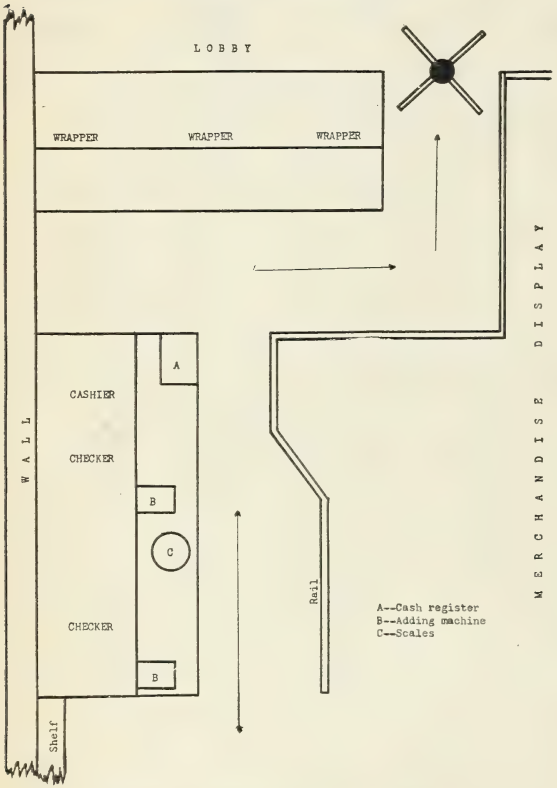

FIG. 4.—One-way exit where several checkers and wrappers are employed.

In wrapping it is advisable to use paper bags entirely. This is somewhat more expensive so far as the actual cost of paper is concerned, but the saving in time by this method more than offsets the increased cost of the bags over paper and twine. The railing should be about 3½ feet high and should extend the entire length of the counter. It should be so close to the counter that customers are forced to pass before the checker and cashier in single file. This prevents confusion and facilitates the proper checking of all purchases.

In case the volume of business is very large and the store is such that only one exit can be provided the plan shown in figure 4 is suggested. Such an arrangement, while not so efficient as the one

or two employee plan, is the most satisfactory under the conditions named. It would take two checkers and three wrappers to keep up with one cashier, and by this method the store would have an estimated capacity for doing a business of between $100 and $150 per hour. The aisle in front of the checkers and wrappers should be wide enough to allow two persons to pass comfortably, but that in front of the cashier only wide enough to permit one person to pass at a time. Under this arrangement the checker gives the adding-machine slip to the customer, who in turn presents it to the cashier for payment. After paying the cashier the customer passes on to the separate wrapping counter.

Figures 5, 6, 7, and 8 show arrangements for use when it is possible to provide two or more exits. The plan under which each exit is

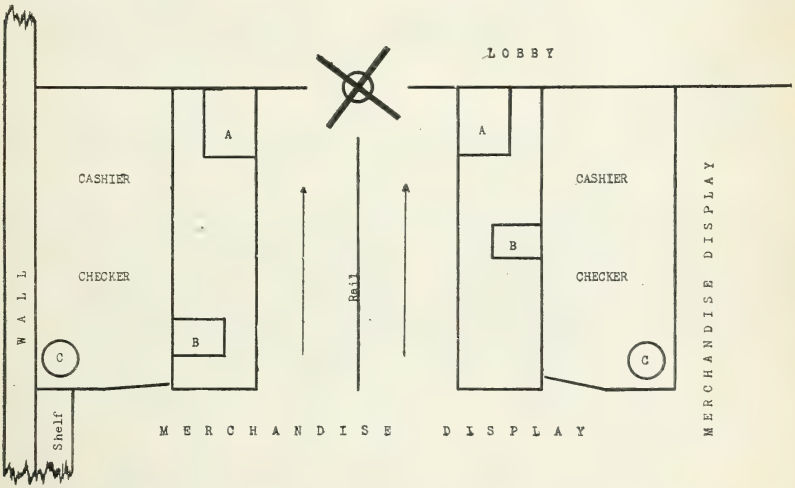

FIG. 5.—Diagram showing the arrangement of two exits. *A*, cash register; *B*, adding machine; *C*, scales.

operated is not different from that described under the one-exit plan. One or more employees may be used at each exit, depending upon the volume of trade and existing conditions. During the dull period of the day, one or two of the exits may be closed, thus liberating the operators for other duties, and increasing the efficiency of the store.

FIXTURES.

The fixtures used in the average self-serve store are simple and inexpensive. The elaborate use of show cases, scales, and other equipment is not necessary in the self-serve store. In fact, they could not be used to advantage, even if it were so desired. In their place are substituted tables and shelves for the display of merchandise. This probably means a reduction of from one-third to one-half in the investment required.

The shelves on the three sides are similar to those in service stores, though not so high, because all merchandise must be within easy

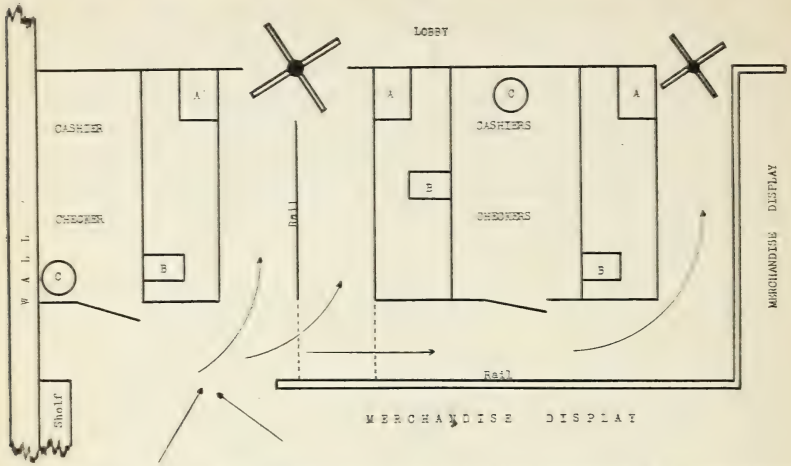

FIG. 6.—Three-way exit showing arrangement of aisles and equipment. *A*, cash register; *B*, adding machine; *C*, scales.

reach of the customer. Many of the dealers are using a deeper shelf than is ordinarily used in a service store, so that a greater quantity of each article may be placed in the same length of shelves and ordi-

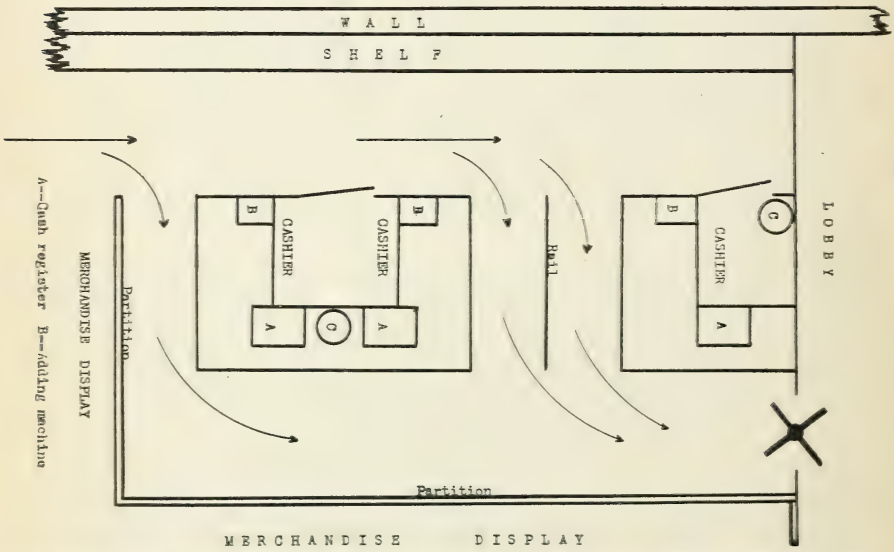

FIG. 7.—Three-way exit showing another arrangement of aisles and equipment. *A*, cash register; *B*, adding machine; *C*, scales.

nary storage saved. These wide shelves are possible in the self-serve store because there are no counters or regular show cases on the floor

and, therefore, no space used in aisles behind the counter for the clerks. In fact, under the self-serve plan a much greater merchandise display can be provided than in a service store with the same amount of floor space.

To a large extent, tables are used for the display of merchandise that can not be placed on the shelves. In some cases double-faced shelves are used lengthwise the store. One large concern controlling the operation of numerous self-serve stores has patented an arrangement of shelves, as shown in figure 8, whereby a customer is forced to pass before all the merchandise on display, a system which has its advantages and disadvantages. After a careful investigation, it is believed that tables used for the display of merchandise are more satisfactory than a series of tall shelves placed out on the floor. It would appear that a better plan than the use of either tables or high shelves is the use of double-faced shelves about 4 feet high in units from 6 to 10 feet long, with display space on top. Such an arrangement preserves the advantages of both the high shelves and the tables, while doing away with some of the disadvantages of both. There are several advantages in the use of display fixtures of medium height in separated units, whether they be tables or shelves. The use of such fixtures affords a better view of the entire stock, is not so tiresome to the eye, and gives a much more pleasing appearance. Also, it allows less chance for thievery, as all customers are more easily seen by

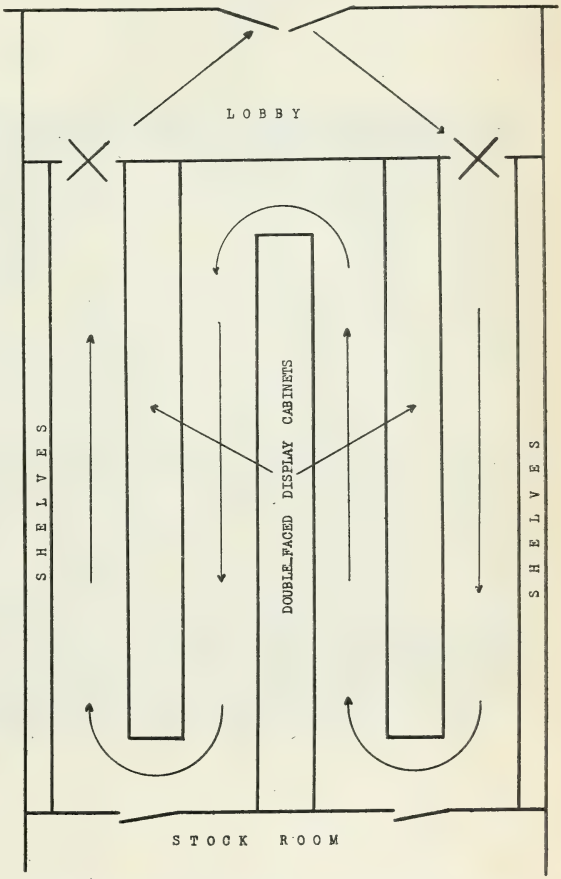

FIG. 8.—Showing arrangement of display shelves in a certain type of store. The circuitous passageway is patented. The cashier's booth is not shown.

store employees and by each other. Theoretically it would seem that the individual purchases would be larger if one is forced to pass before all the merchandise on display, but practically it has not worked out that way. The purchases seem to average about the same, whether one is allowed to proceed at will about the store or is forced around a certain path by the arrangement of tables or shelves.

The arrangement of the display fixtures should be decided by each operator, depending upon the size of the floor and his own desires, and is not vital to the success of self-service, except as it does or does not properly display the merchandise. Figure 9 shows the

FIG. 9.—Farm products displayed for sale in a typical self-serve store.

arrangement of tables in a very successful self-service store now in operation.

The number of scales needed in a self-serve store is considerably less than necessary under the service plan. Scales are necessary only at the exit and in the stock room where the packages are made up. If a considerable volume of business is done, an automatic scale should be placed in the stock room to save time and labor. As practically all bulk goods are put up in packages before being placed on the shelves or tables, and as a great many can be run through a weighing machine, such a machine is very desirable as well as economical.

An adding machine at the exit is not essential, but speeds up the work, insures greater accuracy, and means greater satisfaction to the customer. A suitable type of cash register, while not essential, will greatly facilitate the work of properly and efficiently taking care of the customer at the exit.

The entrance and exit should be so constructed as to allow only a one-way passage. This is effected by the use of turnstiles which provide for the entrance and exit of only one person at a time, and in one direction only. It is sometimes desired to keep a record of the number of persons passing through these turnstiles, both as a check and for statistical purposes. This can be accomplished by placing on each turnstile a small counting machine especially constructed for this purpose.

The refrigerator used for the display of such commodities as butter, cheese, and eggs is one of the most important items in the fixture account. An ordinary ice box can not be used advantageously because it does not permit the proper display of articles which must necessarily be kept in it. Where a considerable volume of business is done a large refrigerator may be built in as part of the partition between the salesroom and the stock room. The doors should be so hinged that they will automatically close tight (by the use of heavy springs) after they have been opened. Something similar to this can be followed out on a larger or smaller scale, depending upon conditions, with satisfactory results.

MERCHANDISE.

There are numerous problems in connection with the buying and selling of merchandise under the self-service plan that do not arise to such an extent under the service plan. These may be conveniently treated under the heads "Buying," "Grading," "Arrangement and display," and "Price display." Practically all of these problems exist in the service store, but their solution does not require such careful consideration, since the management can explain to the salesman, who in turn explains them to the customer. This does not always work out to the best interest of the service store, because of the human equation which enters in.

The information in regard to merchandise that the store wishes to impart to the customer is likely to be more carefully considered, and, therefore, more thoroughly worked out under self-service, because it is more difficult to impart the information under this condition. Under the service plan, as it is likely to be left too much to the initiative of the clerks, it is subject to variable interpretation. The lack of salesmen makes the selling of merchandise more a scientific than a human problem, and therefore in many cases it can be solved to

the greater satisfaction of both the customer and the dealer. Once the customer's confidence is obtained and maintained, through a proper solution of this problem, a better understanding will be had between him and the dealer. The word "substitution" often implies, to a certain extent, an unfair practice. But its use in this discussion implies only a necessary substitution (because of the inability to get the article desired) or one that is made in the best interests of the consumer, as when a buyer can secure an article of the same or better quality at a lower price than that paid for the article for which the substitution was made.

Many dealers make a practice of buying job lots, with little attention to their quality or uniformity as compared with the article substituted, price being the main reason for making the purchase. It is not meant that the actual buying of these job lots be discouraged, but it is believed that the majority of the dealers doing this do not fully take into consideration the selling cost, both in the increased effort necessary for their proper introduction and in the loss of customers' satisfaction, for there is a definite satisfaction on the part of the customer in being able to purchase an article with which he is already familiar, both as to quality and value.

During the past few years it has often been difficult to maintain supplies of certain lines of goods, either because of an actual shortage or the disruption of some phase of the distribution system. This has made the buying problem particularly difficult, and especially so under self-service.

BUYING.

The problems arising in connection with the buying of merchandise intended for sale under the self-service plan are not fundamentally different from those arising under the service plan, but they are magnified to a certain extent and need closer study on the part of the buyer.

Because of the absence of clerks in a self-service store, more attention must be given to supplying the customers with merchandise the quality and grade of which they will be readily able to recognize. This may be done in various ways, and should begin with the buying of the merchandise. Careful consideration must be given to brands, qualities, and grades. After the sale of a certain brand, or otherwise identified articles, has been established in any locality, the discontinuance of the sale of that article and the substitution of another article of the same quality, but with a different identification mark, causes a disturbance which can be overcome only after the expenditure of a considerable amount of energy. This energy may take the form of an explanation on the part of the sales person, or of advertising in various forms, or of the use of confidence, the building up

of which has required considerable effort. This substitution is most difficult to accomplish under self-service, but when made for a just purpose and when the proper methods are used is likely to be more successful than when done under similar conditions in the average service store.

GRADING.

That the grade or quality of all bulk goods, such as dried fruits, rice, coffee, cheese, and butter, may be readily distinguished, careful grading is necessary. In many cases the quality in any one grade need not be entirely uniform, except in so far as that grade can or can not be readily distinguished from another grade of the same commodity. The general principle of careful grading is applicable to any distribution of foodstuffs, because it makes for customer's satisfaction and is fair to all concerned, but it is discussed here as the means to facilitate price recognition on the part of the cashiers and checkers.

There is no difficulty in recognizing different kinds of merchandise, but there is difficulty in recognizing different grades where they are not differentiated by brand or labels but are ascertained only from inspection of the article itself. This applies to those bulk goods that are put up for sale in plain paper bags. Usually the price of each package is written on the bag itself. Of course, the grade must be ascertainable by the customer, and the various methods used for this purpose will be discussed under "Display." But when the package has been removed from its place on the shelf, where its location identifies its grade, there must be some means of definitely determining that grade from the package itself. The writing of the grade on each package involves the expenditure of too much time. Where two or more grades of the same commodity are for sale, the placing of the different prices on each package should suffice. But if any question arises as to the correctness of the price, the grading should have been done with such care that the question can be decided by a mere glance at the contents. This not only requires careful grading, but the elimination of closely associated grades.

In many stores operating under self-service this difficulty is avoided by the carrying of only one grade of these commodities. To make this solution successful, the grade must be selected that will most fully supply the demands of the majority of the customers. This selection requires careful study. Particular attention must be paid to the possibility of maintaining this grade, which is a problem for the store's buyer to solve. In fact, the limiting of a large percentage of this class of commodities to one grade is far from satisfactory.

The grading of fruits and vegetables, which is even more exacting than that of the products already mentioned, will be taken up in the section on "Perishable farm products."

ARRANGEMENT AND DISPLAY.

The arrangement and display of merchandise have troubled the operator of many a self-serve store. When first approaching the problem it would seem that the arrangement of merchandise would necessarily have to be very carefully worked out in order that a person may find the article desired out of some 600 to 1,000 different articles on display. Many elaborate plans have been made for such an arrangement, but the simplest seems to be the most effective. At first thought, looking for any particular article would appear to be like looking for the proverbial needle in the haystack, but it is possible to make the search a very simple matter.

Numerous concerns have arranged their merchandise alphabetically, working out elaborate plans on the assumption that the customer will experience less difficulty in locating the article desired. This would seem to be a good method on paper, but practically it does not work out so well. The main reason is because the possibility of putting so many articles under more than one section confuses the customer. For example, a customer is looking for a certain brand of corn flakes. He is not certain whether it is under C (corn flakes), B (breakfast food), or under the first letter of the brand named. If he looks under C and does not find it, he is not sure whether the store is out of it or whether it is under some other letter. Because of this arrangement the grocer may lose a sale and perhaps a customer. Another disadvantage of this method of arrangement is the fact that associated or similar articles may be in any number of different places, depending upon the completeness with which this alphabetical arrangement has been carried out—that is, whether only large groups or whether the constituents of those groups are arranged alphabetically. This classification of similar articles is not only inadequate but unattractive, since canned goods, bottled goods, and package goods are grouped together in every part of the store.

Probably the simplest, most convenient, and most pleasing arrangement is by groups of similarly appearing and closely associated articles. The commodities carried in the average grocery store readily divide themselves into six, eight, or ten groups of this kind. This grouping is the most natural, therefore the simplest and most convenient, from the dealers' as well as the customers' standpoint. Roughly, the stock may be divided into the following groups:

No. 1. Canned goods.
No. 2. Bottled goods.
No. 3. Package goods.
No. 4. Bulk goods (in paper bags).
No. 5. Cracked goods (flours, meals, etc.).
No. 6. Refrigerator goods.
No. 7. Fresh fruits and vegetables.

The components of the first two groups need no explanation. The third group contains those articles put up by the manufacturer in cardboard or paper cartons, and the fourth, those bought by the store in bulk, but put in packages in the store itself. The sixth group is not limited to cold-storage goods, but includes those fresh goods which keep better in a cool place, such as eggs and butter—all goods to be found in the display refrigerators. The fifth and seventh groups need no explanations.

Under such an arrangement the customer has little difficulty in locating the articles desired. If one of the commodities is put up in cans, he proceeds to the canned-goods shelves, and if he does not find the article there, he feels reasonably certain that it is not in stock at the time.

The merchandise can be further subdivided into groups containing different brands of the same product, or groups of closely associated products. This is only the natural arrangement of the articles in the group, which any grocer would make. He would not place a certain brand of canned milk at one end of the canned-goods group and another brand at the other end, but would place all canned milk in the same section. A partial subdivision of the first group (canned goods) might be made as follows:

A. Milk.
B. Vegetables.
C. Meats.
D. Fish.
E. Fruits.
F. Sirups and molasses.
G. Baking powders.
H. Oils.
I. Cooking fats.

In a few cases it would be found impracticable to carry this grouping out to the letter. For example, chocolate is put up in both cans and cartons, and it might not be advisable to separate the two. In this case they could all be placed either under the canned-goods or package-goods group. If these two groups were adjoining each other on the shelf, it might be well to place such articles in a small section between the two groups. In this way there would be little danger of the customer overlooking them.

The actual location of groups, whether on tables or shelves, is a matter that can be decided by each operator according to his own conditions and ideas. Many self-serve stores have their canned and package goods on one side of the store and the bottled goods, together with the fresh fruits and vegetables, on the other side. The tables may be used for any class of merchandise, the general practice being to use them in connection with advertising. About the only important feature of the arrangement which should be followed under all conditions is that of placing the lighter articles near the entrance and the heavier ones near the exit. The reasons for such an arrange-

ment are obvious, as the customer is required to carry purchases to the cashier's desk at the exit.

The display of merchandise will be dealt with here only in so far as it is a means of identifying merchandise. Such articles as rice, beans, dried fruits, and many other bulk goods are usually put up in paper bags by the dealer before they are put on the shelves or tables for sale. That the customer may know exactly what he is buying, both as to quality and grade, it is almost imperative that he see the article itself, or a sample of the article. Any description that the dealer might place upon the package would not fully identify the goods. If every customer knew the exact quality of the articles carried and had complete confidence in the dealer, such an identification might suffice. But, unfortunately, this condition does not usually exist.

Some method must be used by which the customers may see the goods or a sample of the goods. The use of "window" bags is not practicable because of the expense involved and the lessened durability of the container. The only satisfactory means yet devised is the display of a sample which exactly corresponds, in both grade and quality, to the merchandise in the packages. This is usually done by suspending from the shelf above a small container having a transparent face. It is so made that the sample that it contains can be readily changed. Care should be exercised in placing the samples so that there will be no mistake as to the commodity represented. It is advisable to divide the shelves into sections of only sufficient size to hold the desired number of packages of any one commodity, or any one grade of that commodity.

PRICE DISPLAY.

All merchandise for sale in a self-serve store should be so marked that the customer will have no difficulty in determining the price. This can be done by marking the individual articles, or by having a price tag for each different kind or grade of article, so placed that there can be no misconception in regard to the article to which the price relates.

The main advantage of marking each article is that there can be no question as to its price and the cashier or checker at the exit does not have to remember it. This reduces the possibility of argument between the employees and the customers, thereby saving time and reputation, and also aids in the accuracy of the work at this point. But there are numerous disadvantages in this method, the greatest being the labor involved in marking the packages. This requires as much time, if not more, than is used in putting the articles on the shelves. The marking is usually done by pencil, either on the arti-

cle itself or on a small sticker that can be put on the article. There are special machines made for this purpose that print the price on a perforated, gummed sticker. This sticker may also carry the store's identification mark if desired. In opening up a case of goods to be placed on the shelves, the desired number of stickers can be run off on the machine and then put on the articles as they are taken from the case. This is the most satisfactory way of marking the individual items, as it not only makes a good appearance but helps to identify the article as being purchased at that particular store. Another advantage of this method over marking the price with pencil is that when price changes are made, another figure can be placed over the old price, whereas when marked with a pencil the old price has to be either erased or crossed out and the new one written on, which detracts from the appearance of the article. On many articles it is almost impossible to write the price so that it can be found readily by either the customer or the cashier.

The chief advantage of using a single price tag to apply to a number of articles of the same kind or grade is the saving of time effected over writing the price on the individual articles. Time is saved when the articles are first placed on the shelves, when any change in price is made, and at the cashier's desk. When a price change is made and a number of articles on which the change is made are on the shelves, the first method discussed involves the changing of many prices, while this method involves the changing of only one price. At the cashier's desk a considerable amount of time in the aggregate is involved in hunting for the price on each article. It might be thought that the cashier and checker would become so familiar with the prices that they would not have to look on the article for the price, but this is not as true as might be supposed. In the second place, the cashier and checker rely on this marking to determine the changes, and through force of habit will look for the price even on articles of which they know the price. Also, they might, if they should rely upon their memory, overlook price changes recently made, because under this method they are not necessarily informed of the changes.

The location of the group price tag is an important matter. The most common method is to place it on the edge of the shelf, as representing the goods on that shelf. But the customer does not always know that the tag represents the price of the goods immediately above, and when the goods on the shelf below are of such size or piled in such a way as to bring them near the bottom of the shelf above, there is likely to be confusion. The most satisfactory way is to suspend the tag from the shelf or cabinet so that its location will be immediately in front of the articles it represents. One method used is to hang the tags on a fine wire across the face of the shelves or

cabinets, about one-third of the distance from the shelf on which the goods are placed to the shelf above (fig. 10). The wire also prevents small bottled goods from falling out of the shelves. Another method suspends the tag diagonally from the corner of the section of the shelf or cabinet, or vertically from the shelf above, as shown in figures 11 and 12, respectively. This is satisfactory, except that since the tag is stationary it may interfere somewhat with the placing of the goods on the shelves and their removal by the customers. Probably the most satisfactory means of suspending these tags is by some swinging arrangement effected by the use of a screw eye or staple in the shelf above and a metal strip or wire suspends the tag. In this way the price tag can be swung to one side when necessary to place or remove articles directly behind it. It should be noted that certain swinging tags of the latter type have been patented.

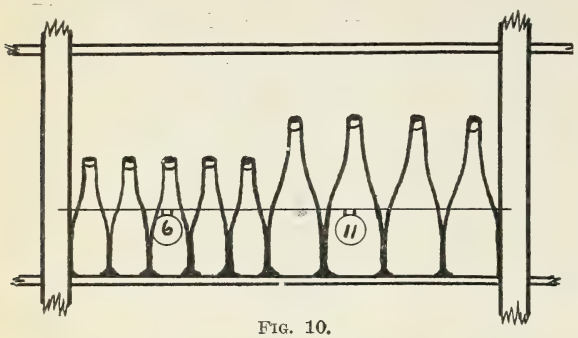

FIG. 10.

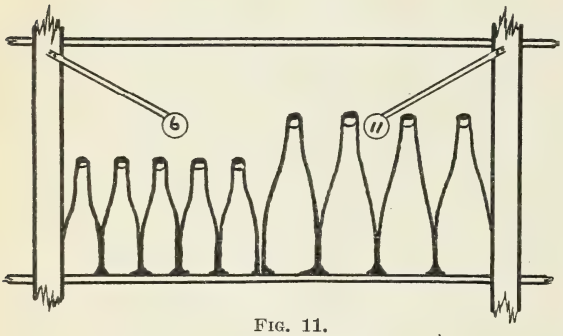

FIG. 11.

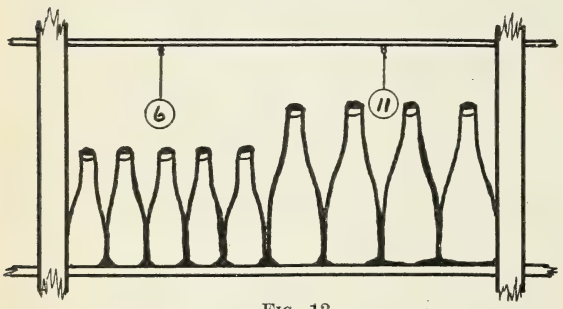

FIG. 12.

Diagrams showing methods of attaching price tags.

SALESMANSHIP.

At first thought it does not seem that such a thing as salesmanship should enter into the operation of a self-serve store. But it does, and to a considerable extent. If this were not so, the introducing of new articles and the placing of special emphasis of certain kinds

of goods, which the dealer believes represent the best value to the customer, would be almost impossible. This salesmanship is brought about by the proper correlation between the outside advertising (newspapers, circulars, etc) and the display of merchandise in the store. This backing-up of the advertising is probably best effected by the use of display tables. Articles on the tables located nearest the entrance have more prominence than articles located in any other part of the store; therefore the use of tables so situated is most effective. By the constant use of the front tables to display articles advertised, or, where advertising is not extensively carried on, to display articles of exceptional value both as to quality and price, the customer comes to look upon the merchandise on those tables with special interest. If care is used in selecting the articles, so that in every case the customer's satisfaction is assured, the method can be made very efficient. In the case of one successful self-serve store the customers have apparently come to give as much weight to the fact that an article is displayed on a certain table as they would to the recommendation of a salesman.

In order that the customers who do not see the advertisements nor notice the articles on the display table may find those goods in their accustomed places, it is advisable to leave some of them on the shelves; so the tables should be filled from the stock room rather than from the shelves. Some dealers use numerous signs indicating the location of the various groups or classes of merchandise in an endeavor to aid the customers in locating their purchases. In the case of articles on the display tables, the large price tag is headed with the name of the article itself. Investigations have shown, however, that if the merchandise is arranged logically, customers have very little difficulty in locating their purchases where no signs are used except those stating the price.

PREVENTION OF THIEVERY.

Assuming that under the self-service plan, because of the accessibility of the merchandise, the attention of the public is more frequently called to the possibility of petty thievery or shoplifting and that this petty thievery does exist to a greater extent than in the service stores, the question is, How can it be most successfully combated? It has already been shown that under proper conditions thievery does not exist to such an extent as to make self-service impracticable; that is, the saving in the cost of operation and the elimination of other conditions existing under the service plan outweigh the loss which is assumed to be peculiar to self-service.

The loss varies greatly in different localities and under different conditions, depending apparently upon the class of trade to which the store caters. An idea as to its extent can be obtained by observa-

tion and by keeping a running inventory of certain articles which the dealer believes would be particularly susceptible to such thievery. If the latter method is to be used, it is well to pick out small articles which could be easily concealed and which are more or less expensive. A half dozen of these could be selected and the inventory taken of them at the beginning of the day's business. The kind, size, and brand of each article should be given to the cashier or checker at the exit, who would be required to list all those articles when presented at the exit by the customers. At the end of the day, another inventory should be taken and the number of items removed should be listed. If all articles are to be accounted for, these figures should

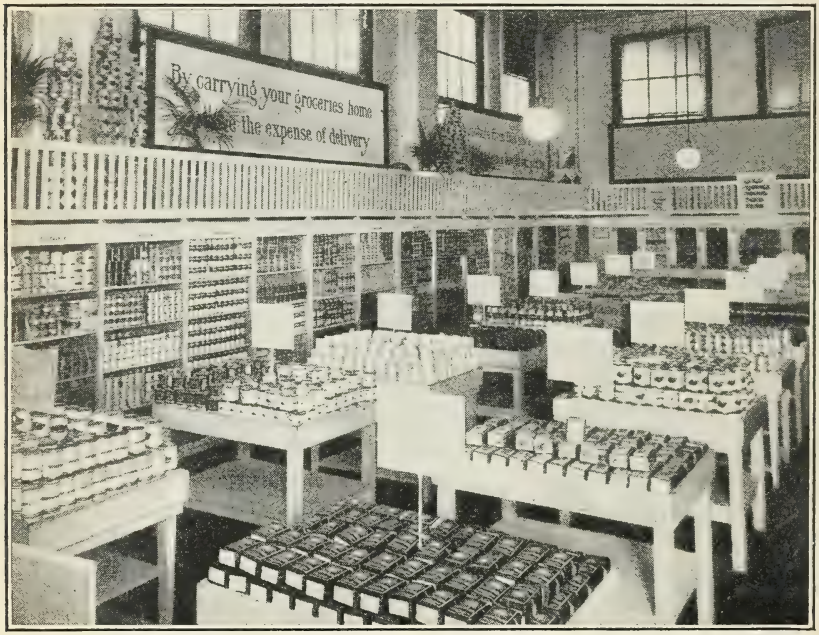

FIG. 13.—General view of a self-serve grocery store, showing both shelves and tables for display of goods.

agree with the cashier's or checker's figures. If there is a difference, either the goods were removed without being paid for, or else the cashier or checker failed to list all the articles presented by the customers. If this method is used a number of times and over a general line of merchandise, a fairly good estimate of the shrinkage by thievery can be obtained.

The instinctive fear of detection comes simultaneously with the act of taking anything for which no payment is intended to be made. Therefore, if the articles most likely to be taken are so placed that an effort must be made to reach them, there is less danger of their being taken. Another method commonly used is that of placing all

the smaller, more expensive articles in the close vicinity of the cashier's desk. This is a good plan not only because the cashier can watch the articles, but also because there are usually more people near the exit and the fear of detection is greater.

The store should be so arranged that an entire view of it may be had from either the cashier's desk or the stock room, or better, from both. The cashier should watch the customers during the hours of slow trade, and some one in the stock room during those hours in which the cashier is especially busy.

In almost any community there are likely to be some persons who make it their business to pilfer merchandise. Therefore, in opening a self-serve store, it is well to bend every effort to weed these undesirables out. This can be most successfully acomplished by employing a woman in the guise of an ordinary shopper to watch for these people. When they are apprehended it is usually considered best to prosecute them because they are a menace to the community at large. Great care should be exercised in determining whether or not the person under observation did actually and intentionally steal the goods, as an unwarranted accusation may lead to serious complications.

DEVELOPMENT OF LARGE VOLUME AND RAPID TURNOVER.

The desirability of obtaining full advantage of the principles of self-service by combining with them the development of large volume of business and rapid turnover has been mentioned. Some specific examples of businesses operated on that basis follow. The observations were made at various self-serve stores. The data do not represent exceptional cases, but were taken at random so as to show the general situation. A separate store is referred to in each of the numbered paragraphs.

(1) Sales were $12,000 per week. Twenty-five people were employed, of whom four were checkers, two cashiers, and six wrappers. Only one exit was used and it was estimated that under this plan the store had a capacity of $250 per hour, which was actually reached during some of the busiest hours of the day.

(2) One store on a Saturday did a business of $2,220, with eight employees, of whom four were boys not employed during the week. This was done with only one exit, at which there were one cashier and two checkers. The number of customers was 2,965. This is an average of 3⅓ customers per minute, each customer's purchase averaging nearly $1. During the busier hours of the day the cashier and checkers handled as many as 8 to 10 customers per minute.

(3) The store's sales were $5,000 for the week. In the store were a small meat department and a pastry department on the service

plan. Each of these departments had one clerk. Besides these there were 8 employees, consisting of the manager, cashier, 2 checkers, 1 clerk in charge of the parcel-checking room where customers were required to check all parcels they brought into the store before being allowed to make their purchases, 1 clerk putting up package goods, 1 stock clerk, and 1 information clerk. All of these clerks were women, with the exception of the manager, who was also the proprietor.

(4) The store's sales averaged $700 per day for the first five days of the week and were $2,200 on Saturday, making the week's total $5,700. This volume was handled by only 4 men throughout the week.

FIG. 14.—Exit in large self-serve store. At the counter the customers' selections are checked, paid for, and wrapped.

This exceptional showing was made only through a very efficient organization. Three exits were used, with only one clerk at each. If the customers in the store were of sufficient number to require only one exit in operation the other two were closed and the clerks immediately went back to work on the stock. Thus the number of exits used was varied with the number of customers in the store, thereby utilizing the full time of all the employees. Of couse, each Saturday night the stock was much depleted and the most of the work for the first five days of the next week consisted of restocking the shelves for the next Saturday.

(5) The store's sales were $8,000 for the week. There were 12 employees, consisting of 3 men and a boy keeping the stock up, 2

cashiers, 2 checkers, 1 man in the stock room acting as receiving clerk and stock man, 1 head clerk who bought all the fruits and vegetables and looked after the merchandise display, etc., 1 manager, and 1 office girl.

HANDLING PERISHABLE FARM PRODUCTS.

There has been a great deal of discussion as to the possibility of handling perishable farm products under the self-service plan. Such products as butter, eggs, and cheese present little difficulty as to handling, but meats and certain fruits and vegetables are somewhat difficult to handle under self-service, in fact so much so that numerous self-serve stores handle them in a separate department under the service plan. The objections to handling them under self-service are that the customers, in selecting their purchases, pick over the goods, selecting only the best and leaving a considerable quantity of merchandise which has to be reduced in price in order to move it, and that the customers damage a considerable quantity in selecting their purchases.

It is practically necessary that a store handle the more perishable products, especially fruits and vegetables. A very few stores do not handle them, but they are not usually successful. Grocers often say that a good display of fresh fruits and vegetables will do more than almost anything else to insure a good trade and that it stimulates trade more than a special sale of staples, even though a better value is given in the sale of the staples.

Fruits and vegetables are handled in numerous ways under self-service, but only a few of these methods have been successful. Because of the usual methods of handling fruits and vegetables which are not carefully worked out, prices on those articles have been relatively higher than other foodstuffs. The public is always attracted by a good display and reasonable prices on these commodities, and the dealer handling them properly should be better able to meet competition on other lines.

Of the problems in connection with handling fruits and vegetables under self-service, some are peculiar to that mode of merchandizing, while others are involved in the handling of fresh fruits and vegetables under any conditions.

BUYING AND GRADING.

Certain fruits and vegetables are more suitable for handling under self-service than others. In general, the products of this class that can be handled most successfully are those that are not highly perishable and easily bruised, and which are, at the same time, of considerable value per unit. Citrus fruits may be taken as representing this group. Such products as potatoes, on the other hand, though not

easily injured, are heavy and bulky in relation to value, and since they must in most cases be carried by the purchaser, they constitute more of a problem under self-service. Potatoes, however, are practically a necessity in the average American household, and in spite of the drawback of bulkiness considerable quantities are sold through self-service stores.

A great deal of difficulty in the handling of fresh fruits and vegetables under the self-serve plan can be overcome by careful buying. The buyer should have in mind the problems arising from the handling of such products and do his buying accordingly. He should buy only those commodities which have been very carefully graded and only those grades which can not be readily confused. Take, for example, oranges, which usually come 96, 100, 126, 150, 176, 200, 216, 252, 288, 300, or 324 to the box. It would be an unwise policy on the buyer's part to choose the sizes 176, 200, and 216 for sale at different prices according to the size of the oranges, because it would be almost impossible for the cashier or checker to distinguish the size and make proper charge for those oranges. It would be much better, if he wished to have three sizes, to buy one size around 100, one around 200, and one around the 300 size, so that the cashiers and checkers would be able to distinguish readily the different sizes.

Special attention also should be paid to obtaining a uniform quality throughout any particular grade. The more uniform the quality, the less the customers will handle or pick over the merchandise, which will, of course, reduce the loss through spoilage or necessary price reductions.

The grading of fresh fruits and velegtables can be done in the store after they have been purchased, but the proper selection of these products at the time they are bought will help considerably. If little attention is paid to the buying, the products will lack uniformity, and in regrading at the store it may be difficult to sort them into distinct classes. Unless this can be done loss is likely to occur, either through the unnecessary handling of the product by the customers or the mistaking of the grade by the cashiers and checkers.

DISPLAY.

After the merchandise has been properly graded it should be displayed in such a manner as to attract the attention of the customers and at the same time to meet the special requirements of the product. Probably the most effective display is by the use of tables or similar unit fixtures, the tops of which may be divided into bins for display of more than one kind of article on the same table. In some instances fresh fruits and vegetables have been put into packages and a sample of the contents displayed. This has proved unsatisfactory, as cus-

tomers apparently are not willing to buy such articles from the samples. They wish to see the actual contents of the package and will usually break tied packages open before purchasing them. This causes waste and also prevents the use of the products for attractive displays.

Fruits and vegetables may be divided into groups, according to the methods of handling that seem most satisfactory. Among those that can be most satisfactorily sold under self-service are oranges, lemons, and grapefruit, cantaloupes, bananas, cabbage, eggplants, cucumbers, peppers, and certain types of apples. Lettuce and cauliflower also are dealt in successfully by some self-service establishments, but they are more easily injured by handling than the other products named. Most of these products are usually exposed in bulk and sold by count, but a few, such as cabbage, cauliflower, and bananas, might be sold by weight, while peppers might be sold by the small basket.

In the case of certain products, display in baskets is practically a necessity because of the smallness of the units or because the products are too perishable to stand bulk display and picking over. In this group may be included lima beans, either shelled or in pods, green peas, string beans, Brussels sprouts, tomatoes, peaches, pears, plums, cherries, grapes, berries, and cranberries. Of course, when the small fruits which may be eaten without preparation are displayed, the temptation to petty pilfering is considerable. For this reason some self-serve stores do not deal in such products, confining their basket trade to vegetables, the larger fruits, and to such small fruits as cranberries, which require cooking. The placing of berries, cherries, etc., near the cashier's desk probably would reduce the pilfering of such products. At least one manager of a self-service store has solved this problem satisfactory to himself by placing baskets of small fruits in his glass-door refrigerators. He finds that customers will not open the doors to pilfer.

Where berries and other small products are displayed in pint or quart boxes, the containers may be sold with the fruit, the whole package being slipped into a paper bag by the wrapper. In the case of many of the products mentioned as best displayed in baskets, however, especially in the case of baskets containing more than a quart, the contents usually are poured into bags by the wrapper, the baskets being retained for repeated use by the store.

A third group, practically confined to vegetables, may be described as semibulky products usually bunched. In this group are green onions, young beets and carrots, oyster plants, radishes, asparagus, rhubarb, celery, and sweet corn. Most of these products can be sold satisfactorily under self-service when exposed in bins or on tables. Sweet corn probably can be sold less satisfactorily under self-service than any other of the products in this group. Customers usually

insist on tearing open the ears and even on squeezing the kernels. For these reasons, some self-serve operators make no effort to sell sweet corn. Others attempt to solve the problem by exposing only a relatively small number of ears at a time, replenishing the supply only when the preceding lot is almost exhausted.

Loose greens, such as spinach, kale, mustard, and endive, can not be dealt in as easily under self-service as some of the other vegetable products, but when the matter is handled rightly these products, too, may be sold successfully. One of the best methods of handling greens is to expose them in bulk in bins or trays with paper bags of several sizes in reach, pricing the products by the pound. The purchaser can then place in a bag about the quantity desired and the purchase can be weighed by the checker. A number of products of the other groups also may often be sold most satisfactorily by weight.

Several methods have been tried in handling under self-service the bulkier vegetables of low unit value, such as potatoes, dry onions, mature beets, carrots, parsnips, and sweet potatoes. In some stores such products are exposed in bulk with large paper bags, into which the purchaser may place the units desired. In other stores the amounts for which there is the greatest demand are placed in bags, often with the tops open to permit inspection. Still other operators display the products in baskets of various sizes, from which they are transferred to bags by the wrapper. On the whole, the most satisfactory method seems to be to expose some of each product in baskets in connection with a bulk display accompanied by empty bags. Such an arrangement meets the desires both of those customers who wish to pick over the stock and those who prefer to save time and trouble by taking a filled container.

In pricing many fresh fruits and vegetables, it may be found advisable to base the price on a small unit, as making the price per orange. This may have a tendency to reduce the size of each sale, but it is much more satisfactory to the customer, as it is always easier for him to figure out what three or four oranges will cost than when the price is quoted per dozen.

The placing of tender-skinned fruits or vegetables in display containers which are likely to cause injury and consequent decay to the product, such as rough wire baskets, should be avoided.

SPOILAGE.

The percentage of spoilage of fresh fruits and vegetables has been variously estimated from 1 per cent to 10 per cent. Few accurate figures are obtainable, but probably the percentage of spoilage depends more upon the method of handling the fresh fruits and vegetables than upon any other one factor. In order to reduce this percentage of spoilage to a minimum, careful buying as to price and

quantity is essential so as to insure a turnover of once a day on the more perishable products and at least once a week on the more staple products.

The average dealer, realizing there is a considerable loss from spoilage and wanting to be on the safe side, marks his more perishable products up perhaps about 50 per cent. This, of course, tends to discourage purchases and causes slow movement, which automatically increases the spoilage. Therefore, when this average dealer is asked what his percentage of loss through spoilage is he can show from his records, if he keeps them, that his spoilage amounts to such and such a high percentage. But this does not necessarily prove that such a percentage of spoilage is anywhere near the minimum that can be obtained. Operators who recognize the value of modern merchandising methods completely reverse this procedure. They examine the articles carefully before they are purchased and buy only sound products; they buy only in suffiient quantities to last for a day or a week, depending on the nature of the products, and they assume that losses from spoilage will be almost negligible if products are sold rapidly. They are enabled, therefore, to make very little allowance for spoilage and to set relatively low prices. These low prices stimulate sales, so that the products are moved into consumption before they have time to spoil.

In one of the self-serve stores studied considerable attention was given to the marketing of fresh fruits and vegetables, and they were handled in a very efficient manner. Careful records were kept of the loss through spoilage, both in the way of a reduction in price to move partially spoiled or damaged products and absolute loss resulting from spoilage, and it was found that this percentage of total spoilage amounted to only 2 per cent of the total sales of fresh fruits and vegetables. This, of course, does not take into consideration the loss through such factors as evaporation, but represents only the visible loss through spoilage and mark-downs necessary to move certain of the more perishable products the same day they were purchased. This loss ranged from 1 per cent on potatoes and 3 per cent on citrus fruits to 20 per cent on Tokay grapes shipped from California. These figures were taken from the records of one month's operations during the latter part of the summer.

ACCOUNTING.

The existence of self-service is primarily dependent upon its ability to sell merchandise to the consumer at a lower cost than by other methods of distribution. In order that this may be most satisfactorily accomplished, the economies of the plan itself should be further emphasized and supplemented, as has been pointed out, by oper-

ation of a large-volume business on a small margin of profit with rapid turnover. On this basis a lower cost to the consumer would be made possible by a saving in operating costs, plus a saving in net profits, for the dealer could secure a sufficient return from his large volume of business by reduced percentage of net profits. In other words, the dealer could get his net income from many small profits instead of from a few large profits.

If this plan of operation is to be followed a closer watch of the business must be kept, because any variation in the gross profit obtained or in the cost of operation would have a relatively greater effect on net income. For example, two dealers receive the same income from their investment, one doing a business of $35,000 per year on the service plan and taking 4 per cent net profit, while the other does a business of $70,000 under the self-serve plan and takes 2 per cent net profit. If in both cases the gross profits fall 1 per cent or the cost of operation increases 1 per cent, measured on net sales, the dealer doing twice the business on half the margin would lose 50 per cent of his profits, while the other dealer would lose only 25 per cent of his profits. This is shown in the following tables.

	Percentage of net profit.	Sales.	Net profit.
Service plan	4	$35,000	$1,400
Self-serve	2	70,000	1,400

If gross profits decrease 1 per cent or cost of operation increases 1 per cent:

	Percentage of net profit.	Sales.	Net profit	Percentage of loss
Service plan	3	$35,000	$1,050	25
Self-serve	1	70,000	700	50

No particular accounting system is advised and therefore none will be dealt with in detail, except that portion of the ordinary accounting necessary to obtain the special information desired. The obtaining of special information is not essential under the self-service plan, because of the self-service aspects, but on the contrary is desirable under any method of business. The matter is mentioned here only because of the particular significance of such information in connection with operation on a small margin of profit.

CLASSIFICATION OF EXPENSES.

In every business, no matter how small or of what nature, sufficient records should be kept so that the net profit or loss can be de-

termined accurately. The methods by which this can be determined vary greatly, some being very simple and others very complex, depending upon the amount and kind of information desired. The subdivision of expense accounts is all that will be dealt with here, since that is of special interest, and also since accounts of this nature are not kept as commonly as might be considered desirable.

In order that an intelligent view of the cost of operation may be had, the expenses should be subdivided into 10 or 15 accounts. An enumeration of the possible accounts, together with a brief description of what they should consist of follows.

1. Management.

To the management account should be charged all office supplies and expenses, such as telephone, stationery, and postage, together with office wages and management salaries. A special buying-expense account is sometimes maintained in establishments large enough to warrant handling the matter in this way. It is assumed here, however, that buying expenses will be included in management expense. To this account should be charged the actual management salary where such a salary is paid. When no management salary is paid, the account should be charged with the salary the manager could command when working for some one else, and the offsetting credit should be made to the owner's personal (drawing) account, to which all checks by him for personal use should be charged.

2. Rent.

Actual expenditures for rent should be charged to the rent account.

3. Interest.

Interest paid should be charged to an interest account. Some accountants treat interest not as a part of operating expense, but as a deduction to be made from net operating profit, in order that the true net income may be ascertained. (See Form I, p. 50.)

4. Insurance and Taxes.

To the insurance and taxes account should be charged all taxes on the stock or equipment or on the volume of business, the cost of local licenses, and Federal revenue taxes except income taxes. The cost of fire insurance on the stock and equipment, employees' liability insurance, and burglary insurance should be charged to this account. Where premiums are paid for fire insurance on the building, however, they should not be charged to this account, but to a realty operating account. If the insurance and taxes account is properly kept, insurance and taxes can be separated readily for income-tax purposes.

5. Heat, Light, and Power.

The cost of all fuel and electricity used in heating and lighting the store and operating power machines should be charged to the heat, light, and power account; also supplies or repairs relating to heat, light, and power.

6. Repairs.

Repairs on fixtures may be charged to the repairs account or to the realty operating account.

7. Depreciation.

A depreciation account yearly should be charged off to show depreciation, 10 per cent of the value of the fixtures.

8. Wages.

To the wages account should be charged all wages paid to those persons connected with the actual handling of merchandise, such as stock men, checkers, and cashiers.

9. Advertising.

All expenditures for advertising, trading stamps, or premiums or demonstrations, plus the value of any time spent by the management in superintending this part of the work, should be charged to the advertising account.

10. Ice and Cold Storage.

Cost of ice, or if a cold-storage plant is operated by the store the cost of its operation, should be charged to the ice and cold-storage account.

11. Wrapping.

The cost of all paper, twine, and paper bags is to be included in the wrapping account. In many cases this expense is charged to the cost of merchandise, but such procedure is unsatisfactory, since it gives an erroneous idea of the returns from merchandise sales.

12. Miscellaneous.

The miscellaneous account should include such expenses as water, laundry, cleaning materials, labor of cleaning, contributions to charity, dues to trade associations, subscriptions to trade periodicals, thefts of money or equipment, and any other small expenses incident to the operation of the store. If desired, certain of these items may be placed in separate accounts, thus making the information even more complete.

In order that a complete summary of the operation over any period may be obtained, the use of Form 1, page 50, is suggested. The

preparation of this summary is explained in the following paragraphs.

13. Operating Statement.

The "sales" figures should represent only the actual or net sales; that is, the money taken in less any allowance to customers for spoiled or unsatisfactory goods purchased or for containers or purchases returned.

Opposite "purchases" should be entered the total billed cost of merchandise bought during the year, less cash discounts received and less allowance received from wholesalers for unsatisfactory goods.

"Inward transportation" should include freight, express, and drayage on incoming merchandise paid by the business.

The "inventory at end" should show the billed cost of the merchandise on hand, less the sum of physical depreciation, market declines below billed cost, and the average percentage of cash discount received. Inventories should never be taken at market prices where such prices are greater than billed cost.

The "inventory at end" is subtracted from the "cost of goods handled," leaving "cost of goods sold." The latter figure is subtracted from the "sales," leaving the "gross profit," which represents the difference between the selling and cost price of goods sold during that period. The totals of the various subdivisions of the expense account are added, and this final total is subtracted from the "gross profit," leaving the "net profit or loss." The column at the right may be used to write in the percentages which the items bear in relation to total sales, the latter being 100 per cent. The chief value of these percentages is that reports covering different periods can be more readily compared.

ASCERTAINMENT OF SHRINKAGE.

The accounting methods already discussed will enable a manager to see how much profit he has been making, his turnover, volume of business, and the expenditures for each of the several classes of expense. The percentage of expense to sales obtained in this way, however, can not be used alone for determining the average percentage of sales that is necessary as a mark up in order to meet the expenses of the business. Certain actual losses in the goods themselves must also be considered.

Spoilage of goods during handling, evaporation in the case of some goods, thievery, waste, and overweight cause a less quantity of goods to be sold than are bought. It may also be necessary to lower the price originally settled upon in order to meet market declines in the wholesale market or competition. Other goods may be marked down for advertising purposes.

Price declines, mark downs for advertising purposes, spoilage, evaporation, overweight, waste, thievery, and net shortage owing to cashier's errors together constitute what may be called "shrinkage." In the case of department stores or chain stores it may also be necessary to consider transfer to other departments or other stores.

In determining the average percentage of mark up necessary shrinkage must be considered in addition to the average percentage of expense burden.

Because of the many diversified lines in the grocery business and the small size of the usual sale it is not practicable to keep account of shrinkage by perpetual inventory methods, but it is practicable by means of a stock-control operation to determine the shrinkage for a representative period, and this will enable the manager to estimate the shrinkage over a longer time.

If the inventory of stock at the end of the period during which the stock-control operation is carried on is subtracted from the sum of the inventory at the beginning, plus purchases, all three items at retail valuations, the result is the retail value of all goods disposed of during the period. The subtraction from this figure of total sales will give the total shrinkage from all sources during the period. Making separate records of retail price declines, of mark downs for advertising purposes, of mark downs for spoilage, and of transfers, these classes of shrinkage can be accurately determined. Mark ups can also be recorded. If the classes of shrinkage mentioned are subtracted from total shrinkage, the corrected retail value of goods sold will be ascertained. When net sales are subtracted the balance will be miscellaneous shrinkage, which is made up of evaporation, overweight, waste, thievery, and shortage, if any, owing to cashier's errors. The details of this operation will be discussed further. Form 6 summarizes the procedure.

If the stock control is kept by classes of goods, such as fresh fruits and vegetables, dairy products, cured meats, and other groceries, the shrinkage from each source and the total can be accurately determined for each class of goods handled. In the same way shrinkage can be determined on individual items if desired.

Under present competitive conditions it may not always be possible for a merchant to add the exact mark up on each item that would be necessary to cover the exact cost of handling that particular article. But if a merchant knows exactly where his losses occur on one article, and how much, he is in a much better position to so manage his business that these losses will be reduced to a minimum.

In arriving at the retail value of purchases for the period, only that stock should be considered which is actually added during the period,

without regard to whether the payment is made before, during, or after the period during which the operation is carried on.

Changes in retail prices are recorded on a form similar to Form 2, "Stock Control Adjustment—A." A new copy of the form can be used each day, or the same one used until it is filled. The manager or proprietor should fill out the first five columns—Date, Description of Article, Unit, Old Price, and New Price—for each article on which a change in price is made. The form should be used as the authorization for the price change itself to make sure that it will be properly filled out. After the above entries have been made by the proprietor for all articles on which he wishes a price changed, the form should be given to the stockman, who makes the actual price change on the merchandise itself. At the time of making this change he should count the number of articles, both on display and in the stock room, and enter the number on the proper line under "Inventory." After this has been done the sheet should go to the cashiers and checkers in order that they may become acquainted with the new prices. If desired, each of these employees should be requested to sign his name on the back of the sheet to show that he has been informed as to the changes.

If this system is used in connection with a chain-store organization it might be well to leave the "old price" blank and have the managers of the branch stores fill this in as they make the changes. This would inform the central office as to whether the managers had been getting the proper price.

When the form has been returned to the office the unit change in price should be entered in the proper column under "Change in price." This should then be multiplied by the inventory and the product entered in the proper column under "Change in stock control." In order that the procedure may be more readily understood, the following examples are given: One showing an advance in price and the other a decrease in price. The information is given as it would appear on Form 2, reading from left to right.

(1) July 2, Blend A coffee, 1 pound, old price 35 cents, new price 38 cents, 53 pounds. Under "Change in price," 3 cents would be entered in the "Up" column. This, multiplied by the inventory, should give $1.59, which should be entered under "Change in stock control" in the "debit" column. The reason for this is that the 53 pounds had been charged in at only 35 cents per pound but is to be sold at 38 cents per pound; and, therefore, the charges to the stock-control merchandise account, in order that the latter may correspond with the sales account, should be increased by this difference, or $1.59.

(2) July 3, Jonathan apples, 1 pound, old price 7 cents, new price 5 cents, 136 pounds. Under "Change in price," 2 cents would be entered in the "Down" column. This, multiplied by the inventory,

would give $2.72, which should be entered under "Change in stock control" in the "credit" column. The reason for this is that the 136 pounds had been charged in at 7 cents per pound but are now to be sold at 5 cents per pound. Therefore the stock-control merchandise account, in order that the latter may correspond with the sales account, should be credited with this difference of $2.72.

At the end of the period the totals of the debit and credit columns should be added and subtracted, respectively, as indicated in Form 6 ("Mark-ups" and "Mark-downs"). These figures are valuable in that they show the trend of the market as well as adjust the merchandise account of the stock-control operation to correspond with the sales.

That price reductions for special-sale purposes may be similarly taken care of, Form 3, "Stock Control Adjustment—B," is recommended. This form should be used in connection with special sales for advertising purposes and not for special prices given because of "good buys," competitions, etc. The first five columns are similar to those of Form 2, except for the heading of the fifth column, which is "Special" instead of "New"; but the entries in this column would be similar in either form. As these special sales are for a short duration, usually one day, and are not intended as permanent, it is necessary to take an inventory at the beginning and ending of the sale in order to determine the number of articles sold at that special price. This inventory should be taken at the time the price is changed on the articles themselves. If the sale is for one day only, it might be necessary to take inventory of only those articles on the shelves or display tables. In this case it would be necessary to keep an accurate record of the number of articles taken from the stock room during the day of sale for the purpose of replenishing the shelves.

The number of articles on hand at the beginning of the sale plus the number received or placed on the shelves during the sale, less the number on hand at the end, would represent the number sold during the sale, and should be entered in the column "Quantity sold." The difference in price per unit would be entered under "Mark-downs," and this, multiplied by the quantity sold, would be the amount to be credited to "Stock control." From the nature of the sales, there would be no "Mark-up"; therefore the columns "Up" and "Debit" on Form 2 are not necessary in this form. The total of the credits to "Stock control" should be subtracted as indicated on Form 6.

As with Form 2, the information obtained from this record is of value aside from that of its use in connection with the adjustment of purchases at the retail price. It shows just how much money has been given away, because of reduced prices, for advertising purposes. In a great many cases this amount is far in excess of what it is believed to be. Whether or not this loss should be charged as a cost

of advertising can be left to the judgment of the operator. Knowing the cost, not the final disposition of it, is the matter of real importance.

Another factor in the shrinkage of merchandise is spoilage. This can, and should, be segregated, as it is an important factor and one of which very little is known. It can be segregated by the use of Form 4, page 51, "Stock control adjustment—C." The merchandise handled may be divided into four classes, as follows: Fresh fruits and vegetables, cured meats, dairy products, and other groceries. A separate sheet of Form 4 should be used for each class. The name of the class should be entered in the upper left-hand corner of the form in the space provided. It is evident that in order to have the merchandise account at retail comparable to the sales that account should be credited with the loss of sales owing to spoilage, whether this spoilage is complete or only partial, the latter necessitating only a slight reduction in the selling price. The method of using this form is similar to that of using the forms just described, except that it is filled out by the man in charge of the merchandise which has spoiled. Under partial spoilage is also included any mark downs necessary because of "picked-over" perishables. While these may not be decayed, the size and quality might be such that the original price would have to be reduced in order to move them. This is a common circumstance and one which is usually taken into consideration in the original selling price. In order that entries on this form may be made clear two examples will be given, one in which the spoilage was complete and one in which it was partial:

Example 1.—Fifty 2-pound baskets of tomatoes (a total of 100 pounds of tomatoes) were put up for sale at 15 cents per basket. The merchandise account was charged $7.50, as that would be the total selling price. After 30 of these baskets had been sold at 15 cents each, it was necessary to sell the remaining 20 at 10 cents each, either because partial spoilage made them of inferior quality or because it was seen that they were selling too slowly at 15 cents and might spoil before they could be sold the next day. The following entries would be made on Form 4: Date; tomatoes; 2-pound baskets; old price, 15 cents; new price, 10 cents; inventory, 20; mark downs, 5 cents; credit stock control, $1.

Example 2.—If, at the end of the day, 5 baskets were left which were so badly spoiled that they had to be thrown out, the entries would be: Date; tomatoes; 2-pound baskets; old price, 10 cents; new price, 0 cents; inventory, 5; mark down, 10 cents; credit merchandise account, 50 cents. The money received for these 50 baskets of tomatoes would be 30 at 15 cents, or $4.50; and 15 at 10 cents, or $1.50; the total being $6. The merchandise account was originally

charged $7.50; but, through this adjustment, it would be credited with $1 and 50 cents, being a total of $1.50, leaving the net charge to the merchandise account $6, which exactly corresponds with the sales account. Differences could occur in these two accounts in only two ways: (1) Some of the baskets might be taken without being paid for; or (2) the clerk in filling the baskets might put more than 2 pounds in each. The latter situation could arise only if the selling price had been determined at 7½ cents per pound before the baskets were made up and there were more than 100 pounds of tomatoes in the lot charged in. If there were exactly 100 pounds all of the 50 baskets could not be filled, of course, unless the average quantity of tomatoes in each was 2 pounds.

If the retail value of the stock sold is kept by the four classes mentioned in connection with the spoilage record, i. e., fresh fruits and vegetables, dairy products, cured meats, and other groceries, the percentage of spoilage for each class can be readily determined, as well as the percentage of total spoilage.

It is valuable to know the percentage of spoilage, since the percentage of mark-up can be more intelligently arrived at after an examination of these records. It is believed that in the majority of cases the percentage of loss through spoilage of fresh fruits and vegetables will be found to be less than is generally supposed. When this is true it becomes possible to reduce the prices on these articles, which in turn will tend to increase sales, and again reduce the loss through spoilage.

Form 5, page 52, headed "Stock Control Adjustment—D," can be used in connection with chain-store organizations or department stores where merchandise is often transferred from one branch to another without a cash payment being made. Obviously, the entire retail value of the transfer should be credited to the merchandise account; therefore, it is necessary only to multiply the number of articles by the selling price per article to obtain this charge. Such a form is needed, because under the ordinary chain-store management no provision is made for adjusting the retail value of the purchases, which must be done in order that each branch may keep its accounts straight.

After the stock-control data are assembled on the special forms as described, they should be reduced to a single statement, somewhat similar to the ordinary operating statement used by many concerns. Form 6, page 52, is a convenient form for this purpose, and can be used to great advantage in bringing out the information obtained in such a way as to make it easily understood. All figures are at the retail selling price. To the opening inventory should be added the net purchases (purchases less transfers), and to the sum should be added total mark-ups. The total will be the gross retail value of the

goods handled. All of the mark-downs should then be added together and subtracted from the gross retail value of the goods handled, the result being the net retail value of the goods handled. The closing inventory should then be subtracted from the net retail value of the goods handled, leaving the net retail value of the goods sold. The net sales are subtracted from this latter figure, leaving the "shrinkage" which represents that loss caused by evaporation, overweight, waste, net losses, if any, from cashier's errors, and petty thievery. So far as can be determined, the first four causes would represent about 1 per cent of the sales in the average store, the remainder resulting from petty thievery.

SUMMARY OF INVESTIGATIONS.

Self-service stores owe their existence to the fact that by eliminating a large part of the salary expense as compared with ordinary service stores the cost of operation can be reduced under favorable conditions, making it possible to sell goods of a given quality at lower prices.

Where economic conditions justify the existence of a self-service store, its advantages over ordinary service stores are:

Relatively low operating expense.
Smaller investment in proportion to size of business.
Greater ease of filling employment needs.
Greater satisfaction to the average customer.
Possibility of educating customers through display.

The disadvantages of self-service are:

It is not applicable to all consumers but only to those willing to dispense with certain service for the sake of lower prices.
Certain goods can not be "pushed" as when salesmen are employed.
The possibilities of thievery are greater, though the investigations of the Bureau of Markets indicate that thievery is not responsible for any considerable losses.

The important general considerations in the establishment and operation of self-service stores are:

Proper location.
Convenient arrangement of the store and display of goods.
Intelligent buying, grading, and pricing.

Self-service may be satisfactorily applied to the retailing of nearly all perishable farm products except fresh meats, but modifications of the usual methods are necessary in the cases of some such products.

Careful accounting is necessary in operation of a store under self-service. This is true not only because of the methods of merchandising peculiar to self-service, but also because self-service usually

implies operation on a very narrow margin of profit, and where margins are narrow under any system it is important that managers be able to follow costs of operations, volume of business, and rapidity of turnover very closely.

Data, as well as general ideas as to the practicability of self-service, have been gathered from numerous self-service stores located in nearly every section of the country. Some of these stores have been very successful and have applied the principles of self-service to their business intelligently, while others are operating on almost the same basis as when on the service plan, except for a mere changing of the physical arrangement of the stores. Some operators who tried self-service have gone back to the service plan, asserting that self-service was not a success. It was usually found that in those cases the results of the operation showed a lack of knowledge of the fundamentals of self-service. Some failures were due to the poor location of the stores, the operators believing self-service could be made a success in ordinary "neighborhood" store locations. On the whole, it was found that self-service in the distribution of food products is operating successfully wherever the principles of self-service have been intelligently applied, and that where the operations are in the hands of particularly well-qualified operators the success is marked.

Form 1.

OPERATING STATEMENT.

			Per cent.
SALES (net)			100
Inventory at beginning			
Purchases			
Inward transportation			
Costs of goods handled			
Inventory at end			
COST OF GOODS SOLD			
GROSS PROFIT			
Management expense			
Rent			
Interest			
Insurance and taxes			
Heat, light, and power			
Repairs			
Depreciation			
Wages			
Advertising			
Ice and cold storage			
Wrapping			
Miscellaneous			
TOTAL EXPENSE			
NET OPERATING PROFIT OR LOSS			

Form 2.

STOCK CONTROL ADJUSTMENT—A.

[For price fluctuation.]

Article.			Price.		Inventory.	Change in price.		Change in stock control.	
Date.	Description.	Unit.	Old.	New.		Up.	Down.	Debit.	Credit.

Totals .....
Subtract .....
Post difference .....

Form 3.

STOCK CONTROL ADJUSTMENT—B.

[For special sale mark downs.]

Article.			Price.		Inventory beginning.	Received.	Inventory end.	Quantity sold.	Mark down.	Credit stock control.
Date.	Description.	Unit.	Old.	Special.						
	Total...									

Form 4.

STOCK CONTROL ADJUSTMENT—C.

[For mark downs because of spoilage.]

Class of goods .....

Article.			Price.		Inventory.	Mark downs.	Credit stock control.
Date.	Description.	Unit.	Old.	New.			
	Total.....						

Form 5.

STOCK CONTROL ADJUSTMENT—D.

[Transfers.]

Article.			Price.	Inventory.	Credit stock control.
Date.	Description.	Unit.			
	Total				

Form 6.

STOCK CONTROL SUMMARY.

			Per cent.
Opening inventory			
Purchases			
Less transfers			
Net purchases			
Add mark-ups			
GROSS RETAIL VALUE OF GOODS HANDLED			
Less:			
Regular mark-downs			
Advertising mark-downs			
Spoilage mark-downs			
Total mark-downs			
NET RETAIL VALUE OF GOODS HANDLED			
CLOSING INVENTORY			
RETAIL VALUE OF GOODS SOLD			
LESS NET SALES			100
"SHRINKAGE"			

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